ROCKS and MINERALS

PUBLISHED MONTHLY

Edited and Published by PETER ZODAC

March-April 1950

Contents for March - April, 1950

CHIPS FROM THE QUARRY 114
SOME OBSERVATIONS ON A SOJOURN THRU EUROPE. PART 2. *By Joel Martin Halpern* 115
FIELD TRIP (A POEM) *By F. E. Schiller* 122
RARE EARTH DEPOSITS FOUND IN CALIFORNIA 123
CAVES OF WEST VIRGINIA 123
GARNETS IN THE LAND DOWN UNDER. PART 2. *By John N. Trainer* 124
AN EPSOMITE OCCURRENCE IN THE TINTIC DISTRICT, UTAH. *By Fred F. Meissner* 132
THE OCCURRENCE AND ASSOCIATION OF MILLERITE AND FLUORITE IN LIMESTONE QUARRIES OF ST. LOUIS, MO. AREA *By J. A. Schraut, Jr.* 134
FULGURITES. *By Paul Hurd* 135
POUND OF TEA ISLAND, MAINE. *By Peter Zodac* 136
INSIGNIA CONTEST OF THE AMERICAN FEDERATION CONTEST 138
DEEPEST MINE SHAFT IN NORTH AMERICA 138
CONVENTION BULLETINS TO ALL MINERAL SOCIETIES 138
COBALT, CANADA, MINES ARE BEING REOPENED 139
SAMPLING CAPE MOUNTAIN CASSITERITE. *By Leo H. Satz* 140
MORE NOTES ON ORCHARD HILL, ELMSFORD, N. Y. *By Evelyn Waite* .. 144
AERIAL FIELD TRIP PLANNED FOR AMERICAN FEDERATION CONCLAVE 145
ROCKS AND MINERALS OF THE MOON. *By Jeff Hill* 146
ATTENTION NORTH CAROLINA COLLECTORS 147
GEORGE R. HOWE (OBITUARY NOTICE) *By Charles F. Marble* 147
WORLD NEWS ON MINERAL OCCURRENCES 148
SUGGESTIONS FOR PROTECTION OF FRAGILE SPECIMENS. *By W. J. Foster* 155
SOME MINES OF OXFORD COUNTY, MAINE. *By Neil Jorgensen* 158
NEWARK MINERALOGICAL SOCIETY. *By Louis Reamer* 160
TEXAS MINERAL SHOW 163
THE MICRO-MOUNTER. *Conducted by Leo N. Yedlin* 164
COLLECTORS' COLUMN. *Conducted by A. Cal Lector* 168
CLUB AND SOCIETY NOTES 169
ROBERT C. VANCE (OBITUARY NOTICE) 178
JADE AND CHRYSOPRASE IN TULARE COUNTY, CALIF. 179

Entered as second-class matter September 13, 1926, at the Post Office at Peekskill, N. Y., under the Act of March 3, 1879

Title registered in U. S. Patent Office. Copyright 1950 by Peter Zodac

Specially written articles (as contributions) are desired.
Subscription price $3.00 a year; Current numbers, 60c a copy. No responsibility is assumed for subscriptions paid to agents and it is best to remit direct to the Publisher.
Issued bi-monthly on the 30th of the uneven months.

Authors alone are responsible for statements made and opinions expressed in their respective articles.

ROCKS and MINERALS, 157 WELLS ST., PEEKSKILL, N. Y. U. S. A.

The official Journal of the Rocks and Minerals Association

CHIPS FROM THE QUARRY

COMING EVENTS

NATIONAL SPELEOLOGICAL SOCIETY CONVENTION
March 31 - April 2, 1950
Dodge Hotel, Washington, D. C.

TEXAS MINERAL SHOW
April 22-23, 1950
City Coliseum, Austin, Texas
J. J. Brown, Mgr. of Show, 302 Walton Bldg., Austin, Texas.

TEXAS GEM SHOW
June 7-9, 1950
El Paso, Texas
Mrs. Kathleen C. Miller, 300 W. Franklin Street, El Paso, Texas, Sec.-Treas.
Rocky Mt. Federation of Mineral Societies, sponsor of Show.

CALIFORNIA FEDERATION COVENTION
June 17-18, 1950
Trona, Calif.
Don MacLachlan, Publicity Chairman, P. O. Box N81, China Lake, Calif.

3rd ANNUAL CONVENTION
American Federation of Mineral Societies
June 28-30, 1950
Milwaukee Auditorium, Milwaukee, Wisc.
Herbert Grand-Girard, Publicity Chairman
817 Mulford St., Evanston, Ill.
(See full page ad in this issue, p. 183)

BIG POW-WOW IN WASHINGTON
July 1-4, 1950
Vantage, Wash.

Big cooperative 4-day field meeting of various rock clubs in Washington. A small group of collectors, including French Morgan of Washington, D. C., R. L. Sylvester, of Syracuse, N. Y., C. H. Robinson, Sr., of Puyallup, Wash., will meet on June 25th in Payette, Idaho, at the home of Frank S. Zimmerman (425 N. 6th St.) and with Mr. Zimmerman, are to visit a number of localities around Payette and then journey to Vantage.

HOW PEEKSKILL GOT ITS NAME!

For years, *Rocks and Minerals* has been receiving letters incorrectly addressed—Peeksville, Peekshill, Pecksville, etc. The correct name, of course, is Peekskill.

The word, Peekskill, is a combination of two Dutch words, "Peek" and "Kill."

In 1654 a Dutchman, named Jan Peek, built a small cabin on the bank of what is now Annsville Creek, the northern boundary of Peekskill. He was the first white man to settle here. For sometime the stream was known as Peek's Creek or Peek's Kill (kill is the Dutch word for creek). Later, when a settlement sprang up in the area the good citizens thought it most appropriate that it be named in honor of its first settler and so in 1764, the two Dutch words were combined to "Peekskill", by which name the city is now known.

REPRINTS AVAILABLE

There have been so many requests for reprints lately that the following bit of information may be of value. They can be supplied and at the following rates:

100 copies	2 pages	$ 3.75
100 copies	4 pages	7.25
100 copies	6 pages	10.25
100 copies	8 pages	12.75
100 copies	10 pages	15.00

All reprints must be ordered in advance, before the articles make their appearance in print.

ROCKS and MINERALS
PUBLISHED MONTHLY

March-April 1950

Edited and Published by PETER ZODAC

SOME OBSERVATIONS ON A SOJOURN THRU EUROPE

(Part 2)

By JOEL MARTIN HALPERN

I left Paris on August 20 with only a sketchy idea as to my future plan of action. Taking the Scandinavian Express which goes all the way to Stockholm via Belgium, the British Zone of Germany and Copenhagen, I got off at Namur in Belgium and from there hitch-hiked to the Ardennes, a beautiful pine forest in southern Belgium and Luxemburg. There was a good deal of fighting here during the war. The town of Bastogne which was the center of the famous "Battle of the Bulge" is largely rebuilt and there is an American tank in the center of the town square in honor of the forces which liberated the town. Retracing my steps northward and relying on the same means of transportation I passed thru Brussels, Ghent, Bruges (the oldest city in Belgium) and then into Holland and on to Amsterdam.

The route which I took crossed the Island of Walcheren. The whole island is below the level of the sea and during the war the surrounding dikes were blown up as a necessary military measure by the allies. Since the end of the war the dikes have been rebuilt. This was a tremendous undertaking, viewed by some as impossible. Its successful completion is truly a functional monument to Dutch persistence and engineering ability.

Two days later I arrived in Amsterdam and some time afterwards boarded the section of the Scandinavian Express which starts at Amsterdam. The train goes thru the British Zone of Germany. Even to travel on the train thru Germany requires a permit from the Occupation Forces. Your passports are checked when the train enters and leaves Germany. After spending a few days in Copenhagen I took the ferry across to Sweden and arrived in Stockholm a few days later.

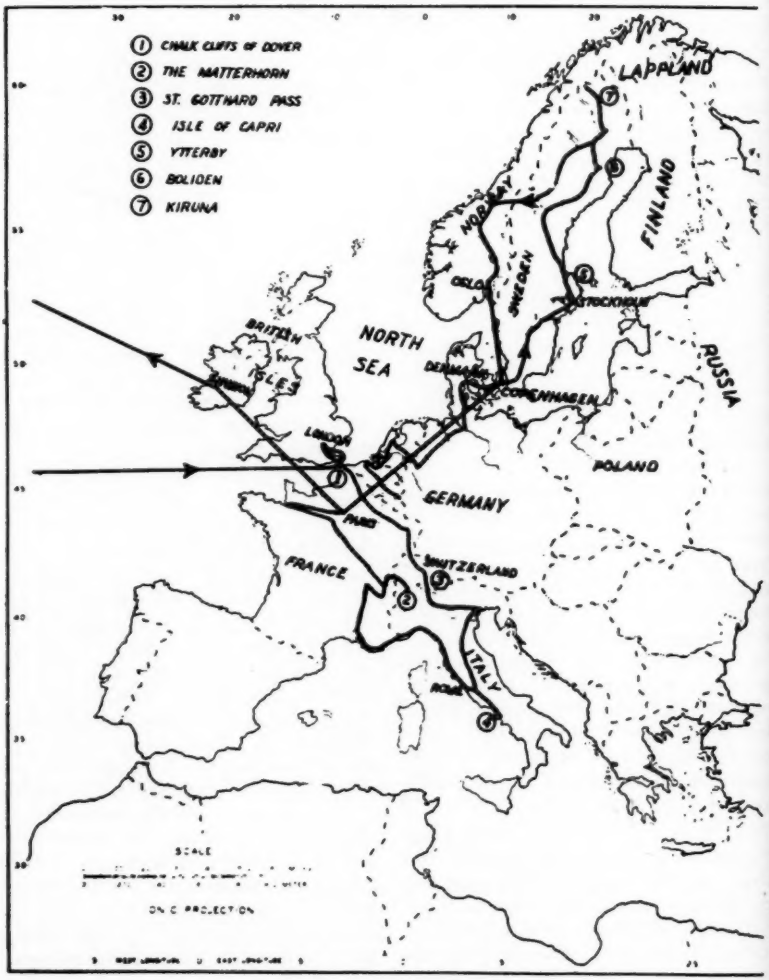
It was my good fortune to have friends in Stockholm, and on the second day of my stay there we went for a cruise in the island archipelago which surrounds the city. Since I have been interested in chemistry and mineralogy for a long time it was only natural, since I was given my choice of course, that I chose to visit Ytterby. This is a part of a small island in the archipelago where the rare earths were first found. It is only a short distance from Lidingo, the island where I was staying. It was drizzling when we first started out but later turned into a most beautiful day.

Ytterby is the name applied to a tiny town which is located on the island of Resarön, about 2 miles north of the old fortess at Vaxholm (see map). A few hundred yards up from the small boat landing is the old feldspar mine. Now only several large piles of waste rock and a water-filled shaft remain. It was here in 1788 that Carl Arrhenius, a famous Swedish chemist and mineralogist, discovered a new black rock which he named Ytterbite. In 1794 Gadolin discovered the complex earth "Yttria" in this mineral which has since been renamed Gadolinite.

Minerals occur in the numerous pegmatite veins traversing the country rock, usually in igneous rocks of great age. The quarry was worked in 1794 for the porcelain factory of Stockholm and later on to a depth of about 560 feet. Most of the rare minerals were found between 0 and 80 feet of the surface. The foot wall of the mine was composed of gneiss, and the hanging wall of diorite. The pegmatite mass lies between these different

rocks, a usual manner of occurrence in this area.

The pegmatite mass of the Ytterby mine is composed chiefly of red microcline, orthoclase, white albite, oligoclase, quartz, muscovite and biotite. Graphic feldspar occurs in some quantity near the walls of the mine. Besides the rare earths listed in the accompanying table the following minerals have also been observed in this mine: garnet, fluorite, beryl, apatite, molybdenite, magnetite, pyrrhotite, pyrite, epidote, cordierite, galena, titanomagnetite, chlorite and calcite.



Map of Europe showing some localities visited by the writer.

TABLE 1

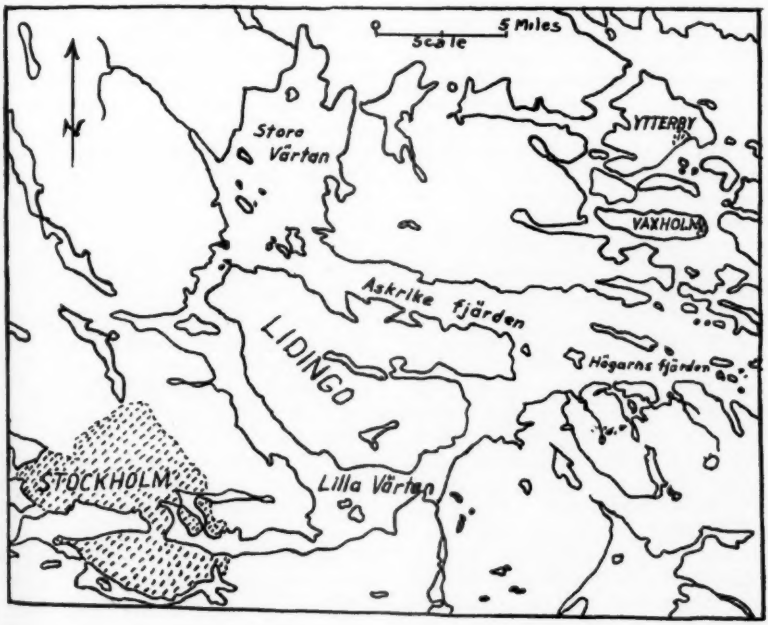
Some of the rare minerals which have been found in the feldspar mine at Ytterby, Sweden.

Name	Composition	Color
Gadolinite	Be_2 Fe Y_2 Si_2 O_{10}	black to brown
Fergusonite	Y, Er, Ce, (Nb, Ta) O_4	brownish black
Xenotine	YPO_4	light brown
Yttrotantalite	(Fe, Ca) (Y,Er) $(TaNb^*)_4O_{15}4H_2O$	brown
Allanite	Ca, Fe, Al, Ce (OH) silicate	
(Orthite)		brown to black
Cyrtolite	(altered Zircon-$ZrSiO_4$)	brown

*Nb is the symbol for Niobium which is equivalent to Columbium, symbol Cb.

The following elements part of the chemical rare earth series have been found with Yttrium (Y); Terbium (Tb), Erbium (Er), Gadolinium (Gd), Samarium (Sm), Ytterbium (Yb), Scandium (Sc), Holmium (Ho), Thulium (Tm) and subordinately the cerium metals; Cerium (Ce), and Lanthanum (La) are associated in the rare minerals of Ytterby. These rare earths are so named because they are extremely scarce in nature. In chemical analysis they are extremely difficult to separate. The separation and positive identification of many of them is only a comparatively recent achievement. In an industrial way they are not too important, but they are used in chemical analysis, plating, alloys and in many other ways.

An example of the way these rare earths occur is given by fergusonite and yttrotantalite which occur as rounded masses on blades of black mica surrounded by light red coarsely crystallized microcline. As to actual collecting possibilities, a publication in 1910 described them in this way: "Of the rare minerals little can be seen at present at Ytterby." My observa-



Map of area northeast of Stockholm, Sweden, showing Ytterby.

tions over 39 years later are identical. Of course there is a fair abundance of many of the commoner minerals listed previously but I was unable to find any rare minerals. Undoubtedly there are still some left but they are very difficult to find and once you have them it is quite a problem to positively identify your specimen because of the complex nature of these minerals.

After spending a delightful week in Stockholm, I decided to travel north again, this time to the town of Boliden where the biggest gold mines in Sweden are located. This town, headquarters for many varied mining operations in the vicinity, has been developed only recently. In 1921 geological explorers discovered a boulder containing pyrites in this general area. However, this only gave a clue as to the location of the mother lode. Finally with the aid of electro prospecting and after many vain attempts at boring with diamond drills the ore body was finally located in December, 1924, below 70 feet of glacial drift. As you might have guessed, this glacial drift makes mineral prospecting extremely difficult in these parts, for almost everywhere a heavy overburden remains and there are few outcrops of mineral-bearing rock. These are souvenirs of the last glacial age which lost its grip on the Scandinavian peninsula more than 8,000 years ago.

The assays of the first drill cores were amazingly high in their gold content but as expected this did not prevail throughout the ore body. After thorough investigations and systematic sampling of the entire deposit the gold now assays one half oz. per metric ton (1,000 kilograms or 2,204.6 pounds). In addition the entire ore body contains, on the average, 1.5% copper, 7% arsenic and 1.5 ozs. of silver per metric ton. The high arsenic content at first gave rise to the greatest difficulties in the refining of the ore but these have been overcome.

By 1928 mining operations had already begun and Boliden had become a town. The mine and town are entirely separate and the community itself is exceedingly well kept and a pleasure to visit. As previously mentioned the ore body was originally covered by a heavy deposit of glacial drift. All this has now been cleared and the ore is being mined in open pits extending to a depth of 165 feet or more. In excess of eleven million cubic feet of soil had to be excavated by power shovels and hauled away before the ore body could be effectively attacked. There are actually two lodes running parallel a short distance from each other which are mined from above in the open pits and from below by filled stopes.

The ore is first separated by the flotation process whereby practically all the gold, silver, copper, arsenic etc., is emulsified and brought to the top and skimmed off while the pyrite and waste rock remain on the bottom. Then thru a series of complex processes the concentrate is roasted several times until almost all the sulfur is removed. The arsenic is converted to the oxide in the gaseous state and condensed into a powder in a large cooling plant. The silver, gold, selenium, caesium and several other elements are extracted electrolytically.

I was fortunate enough to go underground and later visit the extensive and interesting museum in the main building. Everything is extremely modern and American methods are followed to a very large extent. Although the town is only about 120 miles south of the Arctic Circle most of the people have vegetable and flower gardens during the short summer. Surrounding the town there is a thick forest of birch and pine which provides the people with fuel for the long winter. Electric power is quite widely used however, and all the homes are supplied with the latest modern conveniences.

From Boliden I made my way northward thru the iron ore fields of Gellivare and Kiruna in the province of Lapland and on into the arctic tundra which is inhabited almost solely by the nomad Lapps. There is a stretch of very modern electrified railway all the way from the extreme south of Sweden to the port of Narvik on the Norwegian coast. Narvik is located at the same latitude as the most northerly part of Sweden.

Fast, modern express trains leave every day from Stockholm bound for Narvik.

a trip of about one day. Stockholm is easily reached by commercial airlines from New York in approximately one day, so this area is not so far removed from the world scene as it may seem at first glance.

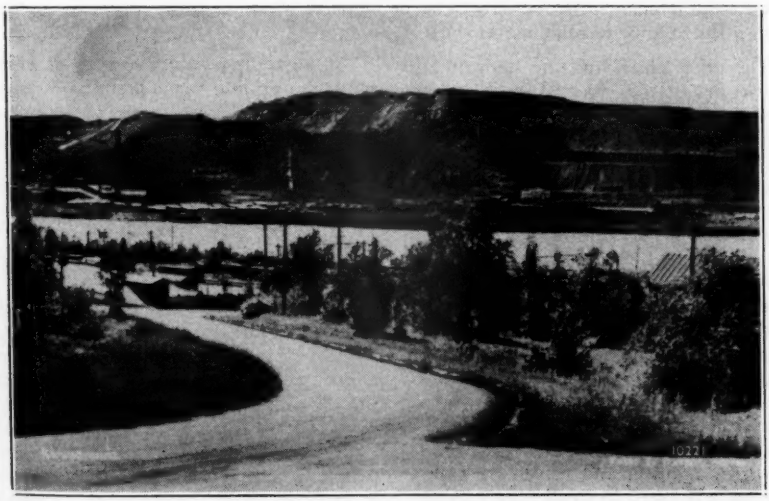
The Kiruna ore fields are situated between the Torne and Kalix rivers about 100 miles from Narvik on the Ofoten Fjord. The distance from Stockholm to Kiruna is about 850 miles. Preparatory work for the mining of the ore was started in 1898 and in the following year the railway reached Kiruna. Extensive traffic began in 1903 when about 800,000 tons of ore were exported.

To give you some idea of what the climate is like in this land of the far north, the yearly average temperature is 30 degress F. and the winter lasts from the beginning of October to the end of May. Generally there is much snow and very often the temperature drops to 30 degrees below zero F. This is something of an understatement since it was below freezing and snowing part of the time when I was in this area in mid September.

Kiruna today has a population of 10,285 and the ore deposit is estimated at 750,000,000 tons. Approximately 5,000,000 tons a year are shipped to foreign countries, England and Germany among others prior to the war. Since this land is in the arctic during the winter the sun stays below the horizon all day for months at a time. During this period work in the mines, which are largely of the open pit type, continues with the aid of artificial lights.

The iron ore mountains lie on an elevated plateau consisting of vast moorlands and moraines. Several rather big, rounded mountains and hills rise in the neighborhood. But Kirunavaara and Luossavaara are the highest, the former reaching a height of about 2,450 feet above sea level and 810 feet above the surrounding country. There are a few birch trees scattered about the region and most of the larger hills rise above the tree line.

Between the various formations which comprise the mineral deposits of the region are heavy moraines and swamps where there are usually no outcropping rocks. The ore consists almost exclusively of magnetite and is remarkably free from almost all non-metallic constituents except apatite. Hematite occurs intermixed as



View showing the iron mine at Kiruna, Sweden.

small irregular lumps and crystals. Included among the other minerals occurring sparingly are pyroxene, uralite, tourmaline, talc, asbestos, calcite and pyrite which is found at greater depths. Rutile is found in thin sections of very pure magnetite, titanite as idiomorphic crystals in the ore. The amount of titanic acid in the ores is generally not as much as 0.5% and the sulphur averages 0.05% or less. The apatite, though, is always present, occurring in varying proportions. In some places the ore is laminated and consists of very thin layers of apatite alternating with thin sheets of iron ore. This produces a remarkable fine stratified structure, which no doubt is one reason why some geologists think that the ore body must be of sedimentary origin.

All the economically important iron ores occurring in Lapland are enclosed in syenitic rocks, which occupy a considerable area extending from the vicinity of Lake Tornetrask in the north to Gellivare in the south. Besides the syenitic rocks (which consist mostly of feldspar) a number of granite and gabbro massives play an essential part in the composition of this area. Dikes of granites, pegmatites, and basic rocks are very common. Here and there sedimentary complexes appear as scattered remnants. All these rocks have been influenced by tectonic movements.

The other chief iron ore body in this district is Gellivare located some distance to the south of Kiruna but also in Lapland and north of the arctic circle. One of the chief features of this district is Malmberget (the Ore Mountain) surrounded by moraine and swamp covered lowlands. The ore deposits of Gellivare are all situated in this mountain. This deposit was developed at a much earlier date than Kiruna for the first accounts of the iron ore here date from the beginning of the eighteenth century, and already in the middle of the same century mining and iron production on a small scale had been tried. At that time the ore was transported by sledges which were drawn by reindeer and driven by Lapps. The ore was taken to small blast furnaces in the neighborhood and there refined. Later (1799-1810) S. G. Hermelin, an eminent scientist, who was a pioneer in the colonization of this area, tried to start an iron industry on a greater scale. However, the high content of phosphorus in the ore and the difficulties of transportation were barriers in the way of further development.

In the Kiruna district the primary structures are still preserved but around Malmberget the metamorphism has transformed the rocks to such a degree that it is often impossible to recognize anything of their original structures. The most striking features of the chemical composition of the ores are the low amount of intermixed silicates and the high percentage of phosphorus (up to 4% in certain places). The general chemical composition of the ores is rather similar to those of Kiruna except that at Gellivare the percentages of iron and phosphorus seem to vary somewhat less between various deposits. This however is not at all conclusive.

With regard to the constituting iron mineral, two types occur at Gellivare: the magnetite ores, and the specular or hematite ores, of which the former are by far predominant. Intermediate forms between these types are found, both ore minerals often being mixed, but on the whole they are fairly well separated.

In one mine corundum enters as a constituent, forming small grains or crystals. Apatite is also present here with the ore and pyrite occurs occasionally in the magnetite ore but on the whole the latter is a very insignificant impurity. The skarn (gangue) minerals, and among them amphibole, are often richly represented in the magnetite ores, but more seldom in the hematite ones

After leaving Kiruna I began one of the most interesting phases of my trip. Ever since I had seen the most colorful and extensive display depicting the life of the nomad Lapps in the Nordiska (North) Museum in Stockholm it had been my determination to visit with these people who live at the end of Europe to see for myself the manner in which they live, tending their herds of reindeer

which has remained unchanged in many ways for hundreds of years. With the help of friends and the kind cooperation of various officials I was able to spend more than a week visiting several villages and as a fitting climax attend a reindeer roundup.

Lapland is neither a political nor a geographic division and may simply be defined as those areas in northern Scandinavia in which the Lapps live and migrate with their reindeer. As such the area includes the most northerly portions of Norway, Sweden, Finland, and the Kola peninsula in Russia. Most of the land lies north of the arctic circle, but the political divisions of Lapland within the various countries also include much land to the south.

The Scandinavian portion of Lapland presents the usual characteristics of the mountain plateau of that peninsula. All the eastern part in Sweden, Finland, and Russia, is part of the ancient worn-down Scandinavian land mass of Archean rocks, which are comparatively low lying. The land is filled with innumerable lakes and swamps which are infected with mosquitoes, the curse of many arctic land, during part of the short summer. On the west side the bold headlands and fjords, deeply grooved valleys and glaciers of Norway occur. Russian Lapland is broadly similar to the lower lying parts of Swedish Lapland, but the great lakes are more generally distributed and the valleys less direct. In the uplands of Swedish Lapland and to some extent in Russian Lapland the lakes afford the principal means of communication.

As you have gathered from the preceding descriptions, the land here is amazingly rich in mineral wealth. This is also true of Finland as well as Sweden. Gold was discovered in stream beds near the Finnish-Norwegian border in 1867 and a minor gold rush started. Several hundred prospectors came in to try their luck. So you see, Lapland has had its own little Klondike too.

The whole region has, as you might expect, been considerably glaciated. Considerable evidence of this confronts you wherever you go in this country. In many

A typical scene in Swedish Lapland.

places the fairly level surfaces are covered with innumerable boulders making walking very difficult. There are many bogs, and a good pair of waterproof hiking boots are a necessity here. However, this is not the cold, barren, forbidding, inhospitable land which many people picture all arctic areas to be. It is rather a land of rare beauty inhabited by a friendly people who never close their door to a stranger. The air is crystal clear and in hiking over the mountains the sight of mirror-like lakes nestled among snow-capped peaks and surrounded by birch and pine trees provides a truly inspiring sight. There are colorful mosses and arctic flowers that color even the glaciers themselves.

The climate is a harsh one, there is no denying that, but here the Lapps have made a good adjustment to their environment. In many of the villages the sedentary Lapps raise hay and the more prosperous ones keep cows, while those who are not so well off usually have a few goats. The reindeer are of course the mainstay of their existence and it is around them that there life revolves.

All too soon it came time for me to leave this strange and wonderful land and start my long trek homeward. I got a lift on a seaplane that transports fish to the railway line. From there I traveled for three days by train, going first to Ostersund in southern Sweden, then to Trondheim in Norway, and finally to Oslo. Then by plane to Paris via Copenhagen. At Paris I boarded a student plane for New York going by way of Shannon, Ireland, and Gander, Newfoundland, finally arriving in New York some four months after I had left. A truly fantastic experience for me and one that still is of a dream-like quality, for sometimes I find it hard to convince myself that all these wonderful things really happened to me.

Bibliography

1. *Guides des Excursions en Suede.* International Geological Congress (11th), Stockholm, 1910; Booklet No. 15, *The Archean Geology of the Coast Regions of Stockholm,* page 48.
2. Levy, *Rare Earths.*
3. Publications of the Boliden Mining Company.
4. Weeks, *Discovery of the Elements.*
5. *Guides des Excursions en Suede.* 11th International Geological Congress Booklet No. 5, *Sketch of the Geology of the Kiruna District* and Booklet No. 6, *The Gellivara Iron Mountain.*
6. *On the Physiography and Late Glacial Deposits in Northern Lapland,* Helsinki (1932).

FIELD TRIP

Get your hammer and your knapsack,
Put a sandwich in your pocket,
We are off to look for minerals
In the quarries and the hills.
No, you do not need a textbook
Or a miner's vast experience—
Merely bring an eye for beauty
And a love for Nature's thrills.

All the garnets in the ledges,
All the tourmalines and pyrites,
All the pretty, white quartz crystals;
All the micas and the rest
Do not care for gilt diplomas—
All they wish is recognition—
On a shelf in your collection
They will be content to rest.

Stones and rocks are things of beauty
And can be a joy forever—
They don't like to lie on hillsides
Undisclosed to eye of man.
They keep urging, "Come to Newry;"
Come to Apatite and Buckfield;
Come to Baldpate and to Greenwood;
Come and find us if you can!"

F. E. Schiller

It is my belief that many people who have a true interest in rock collecting shy away from joining a Mineral Club because they feel they have to be an "expert" to belong.

This little poem refers to many of the best collecting spots in Oxford County, Maine. These places are the favorite haunts of the Oxford County Mineral and Gem Association of which I am a member.

F. E. Schiller
75 Lincoln Ave.
Rumford, Maine

RARE-EARTH DEPOSIT FOUND IN CALIFORNIA

An important discovery of rare-earth minerals in an extremely unusual geological formation has been uncovered in southeastern California. The deposit lies near Mountain Pass Service Station on Route 91 in San Bernardino County, 53 miles southwest of Las Vegas, Nevada, and 33 miles northeast of Baker, Calif. The discovery was made in April 1949, by two of the owners, Clarence Watkins and Herbert S. Woodward of Goodsprings, Nevada.

The unusual nature of the deposit was recognized when the minerals were found to be radioactive by test with the Geiger counter. A preliminary geologic examination has been made by D. Foster Hewett of the U. S. Geological Survey who states that within an area of about 600 by 1,500 feet underlain by Archean rocks, there are at least five veins, three of which contain considerable bastnasite, a fluocarbonate of cerium and lanthanum, with thorium and uranium. The uranium and thorium content, however, appears to be too small to make the deposit of commercial interest for the recovery of these two elements.

In a shallow shaft, the largest vein is about 15 feet wide and it contains between 20 and 30 percent bastnasite. Other rare-earth minerals are present. Accessory minerals are limonite, hematite, barite, fluorite, siderite, quartz, and a little galena. Bastnasite is commonly found in small quantities in some pegmatites; the deposit near Mountain Pass is several lodes in which the most abundant mineral is bastnasite.

Mr. Hewett states that "there can be no doubt that the lodes of the area are a potential commercial source of cerium and lanthanum, the present supply of which is derived from monazite, a mineral largely imported."

Mineral Information Service
Division of Mines,
San Francisco, Calif.
Jan. 1, 1950, p. 1

Caves of West Virginia

Concluding that most caves are unfit for military or commercial use, a volume just published by the West Virginia Geological Survey opens a new chapter in our knowledge of the limestone caverns which are common in many parts of the state. Authored by speleologist William E. Davies, "Caves of West Virginia" locates and describes about 400 caverns, discusses the strange life within them and tells some interesting historical incidents of their early use.

Caves have long been the subject of study in Europe. Ancient man used the caves of Spain for shelter, and drawings on their walls have shown the beginnings of human art forms at a time when Scandinavia was still buried beneath the glaciers. By contrast, little attention has been paid to the caves in the United States, and West Virginia is one of only a few states to map and locate the caves within its boundaries.

Yet the West Virginia caves are not without their own fascinating lore. One, appropriately named after the signer, bears the signature of surveyor George Washington scratched on its wall in 1748. Another yielded the remains of an extinct giant ground sloth to Thomas Jefferson, who described its bones in a scientific journal before he became our third president. Deposits in some of the caves were mined for saltpeter to use in making gunpowder as far back as the War of 1812. Many others were used subsequently by Confederate forces during the War Between the States, while some were hiding places for escaping slaves along the "underground railroad" to freedom. And Higgenbotham Cave even sheltered the first grist mill to be built in southern West Virginia in 1769.

To the geologist, caves often yield assistance in answering perplexing questions concerning the way in which water changes the surface of the earth. For they occur only where limestone strata can be easily dissolved by water which percolates through the rocks and gradually enlarges small cracks or pores into caverns. In some areas where the surface geological features are obscured, caves also offer valuable evidence for tracing the underground extensions of rock strata. In some regions, streams may disappear into caves and flow underground for many miles before re-appearing.

Irregular shapes and sizes of most caves, their usually inaccessible location, and wetness, would prevent their use for military purposes, for underground factories or for bomb shelters in time of war. To the geologist and speleologist, however, they remain an interesting product of natures' shaping of the earth.

Published by the West Virginia Geological Survey, Morgantown, W. Va.

GARNETS IN THE LAND DOWN UNDER

Part Two

By JOHN N. TRAINER
274 Madison Ave., New York 16, N. Y.

New England Range and Great Serpentine Belt in New South Wales

This Range and The Belt form a plateau in northeastern New South Wales, extending south from the Queensland border for about one hundred and fifty miles in the Great Dividing Range. The commercial minerals are tin, mica, molybdenite, bismuth, diamonds and semi-precious stones, including pyrope and in these respects the whole area is characterized as important. There are several interesting garnet occurrences.

At Bowling Alley Point near Nundle, grossularite has been found as small pale yellowish dodecahedral crystals. It was originally reported as topazolite and was found in dikes intruding serpentine associated with prehnite, chalcedony and vesuvianite. The Australian Museum at Sydney has many specimens and reports them as good. The writer's specimens, yellow and colorless crystals on brownish serpentine, answer to the above description. But what is very interesting, vicinal tetrahexagonal forms appear on many crystals like those on topazolite from Italy.

There are three uvarovite occurrences in the New England and Great Serpentine area; at Bowling Alley Point near Nundle, Paling Yard near Barraba and on Nogrigar Creek as described above.

Small red andradite crystals in a mica schist from Tingha are in the Museum at Melbourne. Red grossularite, variety hyacinth, as crystals in chlorite from the Howell District, New England, are also in the Melbourne Museum.

Pale green and white grossularite masses, interesting because it resembles the massive grossularite from Dobschau, Hungary, Roding River, New Zealand, and Buffelsfontein, South Africa, have been found near Bingarra in the serpentine belt. Like the last named, it was first reported as uvarovite because of chromite deposits at the locality. It is in a serpentine dike one mile long and is associated with gold and chrysocolla and under the microscope reveals crystal forms.

In sands in two creeks near Bingarra gemmy pyrope has been found with diamonds.

Wodgina District in Western Australia

This is one of the best garnet districts in Australia and is active today. It is in the Northwest Division of Western Australia and is roughly a circle with a diameter of forty miles with Mt. Tinstone at the center. Hills of Archaen granite which the government reports call "greenstone" rise five hundred to a thousand feet from the plains and in them are pegmatites bearing tantalite, manganotantalite, cassiterite and garnet. These greenstones are 1260 million years old.

Wodgina is the premier tantalum district of Australia. The Australian government is now stockpiling tantalite according to recent press dispatches from Perth.

The garnet localities are at or near Abydos, Mount Francisco, Stannum, Tabba Tabba and Wodgina itself.

At Abydos are well formed small dodecahedrons and trapezohedrons of spessartite, pale yellow, brown and pink.

At Mount Francisco massive grossularite is found.

At Stannum, in detrital tin, spessartite crystals up to two inches in size are found, often enclosing quartz and coated with psilomelane which is an unusual associate.

At Tabba Tabba, small loose trapezohedrons and dodecahedrons of spessartite are found in detrital concentrates of tantalite. The colors are orange and vinaceous cinnamon.

Under the heading, Famous Mineral Localities, there is an excellent paper on the Wodgina District by Dr. Edward S. Simpson in the September, 1928, issue of the *American Mineralogist*. He lists seventy-seven minerals in the district. No doubt more have been found since 1928. It is certainly an important district.

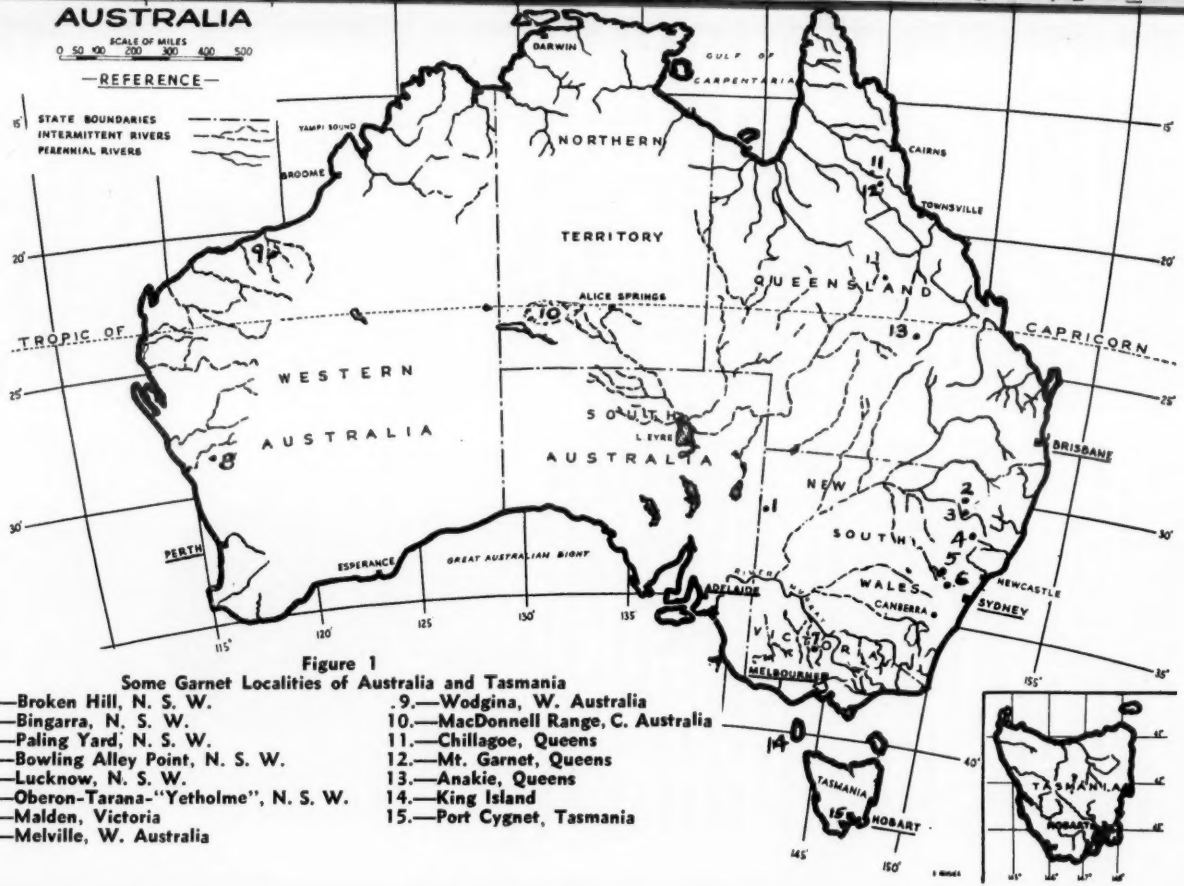


Figure 1
Some Garnet Localities of Australia and Tasmania

1.—Broken Hill, N. S. W.
2.—Bingarra, N. S. W.
3.—Paling Yard, N. S. W.
4.—Bowling Alley Point, N. S. W.
5.—Lucknow, N. S. W.
6.—Oberon-Tarana-"Yetholme", N. S. W.
7.—Malden, Victoria
8.—Melville, W. Australia
9.—Wodgina, W. Australia
10.—MacDonnell Range, C. Australia
11.—Chillagoe, Queens
12.—Mt. Garnet, Queens
13.—Anakie, Queens
14.—King Island
15.—Port Cygnet, Tasmania

Tasmanian Garnets

Tasmania is an island across Bass Strait from Victoria and is the smallest of the states of the Commonwealth. It contains the richest deposits of tin in Australia—the Mount Bischoff Mine being the most celebrated, and here too are some very interesting garnet occurrences.

In Bass Strait, incorporated into the state of Tasmania, lies King Island where there are large reserves of andradite in the scheelite mines which are currently in operation. This is reported by Mr. Mawby as one of the best garnet sources in Australia. The andradite is massive, in sands and also crystal forms with scheelite and calcite but no further information is given. The museum at Victoria has three specimens.

Garnets have been reported from several points on the Emu River at Highwood near Mt. Ramsay and in the Hampshire Hills. The occurrence in the Hampshire Hills is described by the Department of Mines as "important." Andradite, variety aplome, is in profusion as yellowish imperfect crystals and massive. The Queen Victoria Museum at Launceston and the museum in Melbourne have specimens.

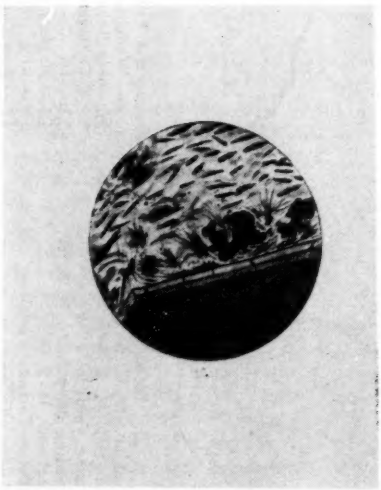


Figure 5

Enlarged section of "Johnstonotite" from Port Cygnet, Tasmania

Cassiterite and vesuvianite are associated minerals.

At Maynes Tin mine near Mount Heemskirk have been found small yellowish brown crystals of grossularite as trapezohedrons or as combinations of trapezohedrons and dodecahedrons, according to a report from the Museum at Launceston. Small clear blood-red crystals of almandite as trapezohedrons and dodecahedrons have also been reported from this area.

Port Cygnet near Hobart, in southeastern Tasmania, has provided mineralogists with a controversial subject. In 1898, a "new" garnet was announced by Macleod and White in the Proceedings of the Royal Society of Tasmania (1898-9) and named johnstonotite with the following analysis: SiO_2-36.87%, Al_2O_3-7.28%, FeO 17.12%, MgO - 12.49%, CaO - 11.98%, MnO-13.689. The National Museum in Washington and the writer have specimens. It is abundant as well developed trapezohedrons over a quarter inch in size brownish yellow, colorless by transmitted light, in a micaceous matrix. Cavities containing it are lined with purple fluorite and arsenopyrite. Under the microscope, zonal banding is observed and in many cases there are inclusions of aegerite-augite. It weathers and decomposes readily and alters to biotite, marcasite and pyrite. Other associated minerals are feldspar and magnetite (See Figure 5).

Professor Clifford Frondel of Harvard writes that this material is almost certainly garnet although he cannot say on a cursory inspection that the analysis makes much sense. He did not examine a specimen, there being none at Harvard, but passed only on the analysis as given above.

Whether a "new" garnet or only another combination of the various elements in garnets is a question.

Small dodecahedrons of melanite, a variety of andradite, in syenite are found at Port Cygnet, occasionally beautifully formed and often with splendid zoned structure as shown in sections under the microscope.

Notes on a Few of the Many Garnet Occurrences in Australia

Pyrope has been found at the Basalt Hills Diggings near Borilla and Anakie in the Leichhardt Mining District of Queensland. It is *in situ* in basalt and in the alluvial deposits at the base of the basalt with gold, zircon, tourmaline and magnetite. Basalt probably covered the old valley as a flow; such deep leads are common in Australia and many have been worked for gold and tin.

Yellow andradites in quartz at Bradford Lead, Malden, Victoria were described in 1870 as "real crystallographic curiosities, hexagonal tables or basal planes with the horizontal edges truncated by narrow pyramidal planes, the basal planes showing fine concentric striae gradually reducing so that the effect is that of a pyramid in imperfect development of the dodecahedron." If you do not understand that description, look at Figure 6. There are specimens in the museum at Melbourne.

Near Bindoon and Gillingarra in the Chittering Valley in the South West Division of Western Australia, not far from Perth (as distances go in Australia) there is an abundance of almandite garnets in interbedded gneiss and mica schist associated with staurolite. Garnet is often associated with staurolite but this is one of only two such occurrences in Australia.

At Dowerin, about a hundred miles northeast of Perth, large nodules of almandite have been found in gem bearing pipes, associated with chrysoberyl but what is notable is that it sometimes encloses crystals of chrysoberyl like the specimens from Haddam, Connecticut.

In the Chillagoe area of Queensland, garnets are frequently reported in the government surveys; at the Dorothy Ti-Tree and other copper mines as good dodecahedral yellowish-brown or yellowish green andradite crystals in feldspar and garnet rocks. The museums at Melbourne and Sydney and the writer have specimens. It is associated with calcite and amphibole in the outcrop near the Dorothy Mine and with brochantite, fluorite and pyrite below the water level. Here is another uncommon case of garnet from a copper mine.

The Oberon-Tarana-Yetholme district in New South Wales is described by the Australian Museum as an outstanding area for its extensive development of andradite garnet. In general the garnet is a product of contact metamorphism (granite on limestone) and is accompanied by wollastonite and epidote. Among others there are some striking specimens of sections of melanite, euhedral but shattered, enclosed by wollastonite have been described. Dull brown dodecahedrons and trapezohedrons of andradite have been found near Oberon in the Duckmaloi River valley with wollastonite, epidote, calcite, chalcopyrite and malachite. Near Tarana, the crystal form is a combination of dodecahedron, trapezohedron and hexoctahedron as shown by the writer's specimen. A specimen from Yetholme, in the writer's collection, is probably andradite. It is a group of dull red dodecahedrons in massive molybdenite with a scattering of quartz crystals covered originally with calcite. It is mentioned later.

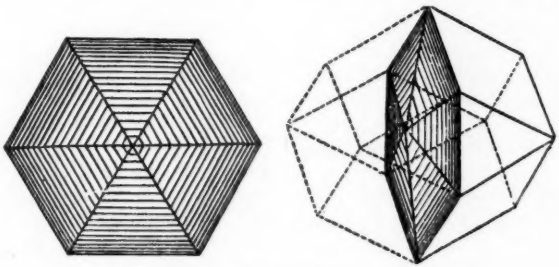


Figure 6
Drawings of Garnet Crystal from Bradford Lead, Malden, Victoria

The Jordan Creek Goldfield west and southwest of Geraldton in Queensland is described as important by the Mining Department at Canberra. Andradite, particularly the variety melanite, has been found here in alluvial deposits with gold, ruby, zircon, topaz and tourmaline. Out of what rocks were these minerals weathered? Almandite is abundant in these deposits as fragments and splinters of a very deep brownish red color which probably were crystals crushed in the washings resulting from the torrential rainstorms in the Great Dividing Range.

Andradites up to one and a half inch in size have been found in the granite of Lady Franklin Hill, Barnawartha, near Chiltern in Victoria. That is the size of a large walnut, but nothing compared with the four inch imperfect almandite crystals found at Lowden in Western Australia of which the museum in Victoria has a specimen. Chlorite after garnet has also been found at Lowden, a specimen of which is in the same museum: can it be the same as the aphrosiderite variety of chlorite after garnet from Michigamme, Michigan? There, by the way, is a place name as picturesque as any in Australia—it is "Indian" to us but "aboriginal" to Australians.

The Anakie Sapphire Field west of Brisbane, Queensland, is important according to the Commonwealth Mineral Resources Survey at Canberra, probably because of the sapphires rather than the pyrope which has been found at Lowood in this field. The pyrope is *in situ* in basalt, rounded, corroded and much fractured but often of gem quality, pale reddish brown and deep red. In the washings at the foot of the basalt, it looks like broken glass, is a bright clear red and is associated with sapphire, hornblende, ilmenite and quartz pebbles. But the interest in this occurrence is that the pyrope in the dykes in the basalt has inclusions of ilmenite.

In the Marulan-Tallong district in New South Wales, along the contact of the Lower Silurian and Grano-Diorite, have been found good garnet crystals (almandite?) in cavities in massive garnet. They are dodecahedrons and are associated with extensively developed wollastonite, vesuvianite, pyroxene and mica. The occurrence is described as an "extremely interesting contact phenomenon."

Near Melville in Elliotts Gold Field in the Murchison Division of Western Australia, beautiful hessian brown crystals of grossularite are found in quartz veinlets in amphibolite. They are dodecahedrons up to nearly an inch in diameter, modified by narrow faces of the trapezohedron and hexoctahedron, often in unoriented groups. The combination of these three crystal forms is unusual. The luster is in most cases brilliant but when weathered is a dull snuff-brown color. Specimens of this grossularite and of almandite from the same locality are in the Simpson collection in Perth.

But the most interesting garnet occurrence at Melville is a nearly spherical spessartite, embedded in "gigantolite," a pseudomorph of muscovite after cordierite. The globular form shows traces of the dodecahedron and is easily removable from the matrix. The fact that it lies across the layers of the mica shows that it crystallized after the cordierite crystallized.

Mt. Garnet is mentioned at this point because it is the only locality in Australia named for the garnet. It is in the Walsh and Tinaroo copper field, near Chillagoe, in Queensland. Andradite is the garnet rock of the mountain and the district. It is mixed with calcite and associated with copper minerals and magnetite. It is also in sands. There is no mention of crystal forms.

Another unusual associate of garnet is bismuth at the Mount Hastings Mine in the Burnett District of Queensland. The only information about the garnet is that it is a decomposed trapezohedron. The reason for mentioning it here is that bismuth is a rare associate.

At the Don Juan Mine, near Mount Havilah between the Great Dividing Range and the Pacific Ocean, in Queensland, has been found colophonite, a variety of andradite, associated with calcite and in the same area pyrope associated with epidote and calcite. No details are given and none of the museums have it in their collections but it is reported in

one of the Queensland Mineral Surveys. This colophonite occurrence is the only one reported in Australia.

The late H. A. Warford of Philadelphia listed world garnet occurrences, but only one from Australia which he did not have in his collection, namely Mudgee in the New England Range in northeastern New South Wales. The writer found mention of it in the government reports. It was discovered many years ago. The garnet is grossularite, the crystal form is the dodecahedron, often in groups, large, and the color is a rich clear dark brown. There are no specimens in any of the Australian museums so far heard from.

One of the old mining fields in Australia is the Port Curtis District in Queensland north of Brisbane, extending from the coast westward into the Great Dividing Range and north to the tropic of Capricorn. Gladstone and Rockhampton are the chief cities. Copper and iron are or were the principal products. Small dodecahedral crystals of pyrope have been found in granite at Four Mile Creek near Mounmera, twenty miles southwest of Rockhampton. A crystal form for pyrope is rare—one questions it. Further on in the same direction is Westwood where pyrenite, a variety of andradite, has been found. About fifty miles southeast of Gladstone, at the Glassford Creek Copper Mine, there is an occurrence of andradite. Andradite has also occurred near Barmundoo on the Booreeco and Diglam Creeks, thirty miles west of Gladstone, in granite and limestone associated with epidote and wollastonite. Garnets have been found at other points in the district but like all the others are inadequately described.

The Queensland Museum has not responded to letters asking for a list of garnets in their collection and, therefore, it is not possible to say whether they have specimens from the Port Curtis District. None of the other Australian museums have them—probably not good enough. Incidentally, there are ninety garnet localities in Queensland.

Nearly six hundred miles up the coast from Brisbane, in District Kennedy North, a tin district, pyrope has been found with topaz in the tin washings in Running Creek, Star River, fifty miles southwest of Ravenswood Junction. Washed from what rocks from the divide? The fact that zircon and garnet "rub elbows" in the washings, does not prove they were associated in their original positions.

Garnets are reported in the Geological Surveys of Queensland at five tin mines at or near Watsonville in the Walsh and Tinaroo Mining Field in Queensland but as in other fields in this state, the species, crystal forms, colors and other details are not given which irritates one who is interested only in garnets.

Victoria, the southernmost state of the Australian mainland has produced nothing notable in garnets but the Woolshed Valley in the nothereast has been important. The river was diverted many years ago and cassiterite, gold, sapphires, garnets and other minerals were panned from the stream bed. Almandite, andradite and grossularite var. cinnamon, were found at different points and small andradite trapezohedrons now in the museum at Melbourne were found *in situ* in a tin vein. The river rises in granite hills and flows over granite beds.

In the writer's collection of garnets from over four hundred localities, there is only one associated with molybdenite from outside of Australia. It is from Topsham, Maine, and it justifies the conclusion that molybdenite is a rare associate. Dana says molybdenite occurs in the New England Range, New South Wales, but rarely in garnet rocks. It is interesting, therefore, to find garnet with molybdenite at localities in New South Wales, namely, Yetholm due west of Sydney in the Central Highlands and Whipstick, in the South Coastal Ranges not far from the Victorian border. The writer has a specimen from Yetholm which has previously been described. Specimens are in the museums at Melbourne, Sydney and Canberra. The mine at Whipstick was worked for molybdenite and bismuth in which there were "quantities" of coarse garnets. Specimens are in the collection at Canberra.

There are few references to pseudomorphs in the Australian surveys. Biotite,

marcasite and pyrite after garnet have been found at Port Cygnet in Tasmania, magnetite after garnet at Chillagoe in Queensland and chlorite after garnet at Lowden in Western Australia.

A grand garnet tour in Australia to dream about would certainly include Broken Hill and the Barrier Range, Lucknow and other uvarovite occurrences, Alice Springs, Wodgina and King Island.

For obvious reasons this report must be recognized as only an incomplete outline and the results are disappointing in many respects.

The writer acknowledges valuable assistance by A. B. Walkom, Director and R. O. Chalmer, mineralogist of The Australian Museum at Sydney; Sylvia G. Whincup, mineralogist of The National Museum of Victoria at Melbourne; Herbert M. Hale, Director of The South Australian Museum at Adelaide; H. G. Raggatt, Director of the Mineral Resources of the Commonwealth; Professor W. H. Bryan, of the University of Queensland; Mr. M. Mawby of Melbourne; Prof. Clifford Frondel of Harvard University; Dr. W. F. Foshag of the U. S. National Museum; Mr. P. Douglas Boerner, a collector, of Alice Springs, Central Australia; F. W. King, dealer, of Alice Springs; N. H. Seward, dealer, of Melbourne; The Australian Consulate in New York City; Dr. F. H. Pough of the American Museum of Natural History in New York City, and Miss Hazel Gay, the librarian of the American Museum in New York who, with her cheerful and efficient assistants, has been of the greatest help in the preparation of this paper.

References and Selected Bibliography

Anderson, C. A. (1916), Bibliography of Australian Mineralogy; N. S. W., Dept. Min., Geol. Sur. Min. Res., Bull. 22, P. P. 1-164.

Anderson, C. A. (1922), Garnet at Broken Hill, N. S. W., Rec. Aust. Mus., Vol. 13, No. 5, P. P. 206-7.

Anderson, C. A. (1901), Jordan Creek Gold Field, Geol. Sur. Queensland, Publ. No. 157.

Anderson, C. A. (1902), Yorkeys Gold Field and Marodian Gold and Copper Fields; Queensland Dept. Mines, Geol. Sur. No. 179, P. P. 1-16.

Anderson, C. A. (1914), Einasleigh Freehold Copper Mines of Northern Queensland; Queensland Dept. Mines. Geol. Sur. Vol. 6, Publ. No. 246.

Beck, R. (1900), Contribution to our Knowledge of Broken Hill; Rec. Geol. Survey, N. S. W., Vol. 7, Part 1, Article V, P. P. 20-28.

Benson, W. N. (1913), Geology and Petrology of the Great Serpentine Belt of N. S. W.; Proc. Linnean Soc. of N. S. W., Vol. 38, P. P. 490 to 517 and 569 to 596.

Berge, J. S.; Brownlee, J. H.; Ringrose, J. C. (1900), List of Minerals of the Walsh and Tinaroo Districts of Queensland, Proc. Roy. Soc. of Queensland, Vol. 15, P. P. 47 to 64.

Card, George W. (1893), On a sand from Bingera; Rec. Geol. Sur. of N. S. W., Vol. 3, Part 4, Article 15, P. P. 111 to 115.

Card, George W. (1902), An eclogite bearing Breccia from the Bingera Diamond Field; Rec. Geol. Sur. of N. S. W., Vol. 7, Part 2, Article 6, P. P. 29 to 39.

Carroll, Dorothy (1945), Census of Western Australian Minerals; West Aust. Dept. Mines. Min. Res., Bull. No. 1.

Clark, Donald (1892), Minerals of eastern Gippsland-Victoria; Aust. Assoc. for the Adv. of Sci., Vol. 4, No. 12.

Cloud, T. C. (1882-3), A Catalogue of South Australian Minerals; Trans. and Proc. Roy. Soc. of So. Australia, Vol. 6, P. P. 72 to 93.

Connah, Frank E. (1909), The Chillagoe Garnet Rock; Proc. Queensland, Roy. Soc; Vol. 22, Part 1, P. P. 31 to 34.

Cotton, Leo A. (1909-10) The Tin Deposits of New England, N. S. W.; Proc. Linnean Soc. N. S. W., Vol. 34, P. P. 733 to 781.

Curran, Rev. J. M. (1897) On the Occurrence of Precious Stones in New South Wales; Jnl. and Proc. Roy. Soc. of N. S. W., Vol. 30, P. P. 214 to 285.

Dunn, E. J. (1913), The Woolshed Valley, Victoria Dept. Mines, Geol. Sur. Bull. 25.

Dunstan, B. (1901-2), The Sapphire Fields of Anakie; Queensland Dept. Mines, Prog. Rep. for 1901, Publs. 172 and 175.

Dunstan, B. (1905), The Ironstone of Mt. Lucy, Chillagoe District; Queensland Dept. Mines, Geol. Sur. Vol. 1, Publ. No. 196.

Dunstan, B. (1913), Queensland Mineral Index and Guide; Queensland Dept. Mines, Geol. Sur. Publ. No. 241, P. P. 424-8.

Harper, L. F. (1920), The Lucknow Gold Field; N. S. W. Dept. Mines, Geo. Sur., Min. Res. No. 30, P. P. 1 to 41.

Hodge-Smith, T. (1923), Occurrence of Garnet at Bowling Alley Point near Nundle; N. S. W.; Rec. Aust. Mus., Vol. 14, P. P. 101 to 104.

Hodge-Smith, T. (1932), Geological and Mineralogical Observations in Central Australia. Rec. Aust. Mus., Vol. 18, P. P. 413 to 442.

Jack, Robert L. (1891), The Chillagoe and Koorboora Mining Districts; Geol. Sur. of Queensland, Publ. No. 69.

Junner, Norman R. (1915), The Petrology of the igneous Rocks near Healesville and Narbethong; Proc. Roy. Soc. of Victoria, Vol. 27, Article 18.

Krusch, P. (1898), Wo kommit bei den Broken Hill lagerstatten de Granat vor? Zeit. fur Prakt. Geologic, Vol. 6, P. 392.

Lindom, E. B. (1887), Catalogue of Queensland Minerals; Proc. Roy. Soc. of Queensland, Vol. 4, P. P. 32 to 78.

Liversidge, A. (1875), The Minerals of New South Wales; Jnl. and Proc. Royl. Soc. of N. S. W., Vol. 9, Art. 13, P. P. 154 to 215.

Liversidge, A. (1880), On some New South Wales Minerals; Jnl. and Proc. Royal Soc. of N. S. W., Vol. 14, Art. 25, P. P. 213 to 225.

Liversidge, A. (1886), Notes on some New South Wales Silver and other Minerals; Jnl. and Proc. Roy. Soc. of N. S. W., Vol. 20, P. P. 231 to 233.

Liversidge, A. (1888), The Minerals of New South Wales; Jnl. and Proc. Roy. Soc. N. S. W., Vol. 22, P. P. 203-4.

Liversidge, A. (1890), Mineral Census of Australasia; Rep. of Com. of Seven (A. Liversidge, Sec.) Aust. Assoc. for Adv. Sci., Vol. 2, P. P. 205 to 282.

Macleod, W. A. and White, O. F. (1900), On the Occurrence of a new species of Garnet at Port Cygnet, Tasmania; Papers and Proc. Roy. Soc. of Tasmania for Years 1898-9, P. P. 74 to 76.

Maitland, A. Gibb (1903), Ann. Progress Rep. of Geol. Sur. of West Aust. for 1903, P. 27.

Maitland, A. Gibb (1904), Marble Bar Tin District of Western Australia; West Aust. Geol. Sur. No. 16, P. P. 58 to 60.

Maitland, A. Gibb (1909), Wodgina Tin Mining Centre; Ann. Prog. Rep. of West. Aust. Geol. Sur. for 1909, P. P. 17 to 18.

Marsh, C. W. (1890), Geological Notes on the Barrier Ranges Silver Field; Jnl. and Proc. Roy. Soc. of N. S. W., Vol. 24, P. P. 177 to 195.

Petterd, W. F. (1902), Notes on unrecorded and other Minerals occurring in Tasmania; Papers and Proc. Roy. Soc. Tasmania, No. 37, P. P. 18 to 33.

Petterd, W. F. (1910), The Minerals of Tasmania, Papers and Proc. Roy. Soc. of Tasmania for 1910, P. P. 1 to 224.

Pittman, E. F. (1892), On the Geological Occurrence of the Broken Hill Ore Deposits; Rec. Geol. Sur. of N. S. W., Vol. 3, Part 2, Art. 11, P. P. 45 to 49.

Pittman, E. F. (1900), The Auriferous Deposits of Lucknow; Rec. Geol. Sur. of N. S. W., Vol. 7, Part 1, Art. 1, P. P. 1 to 9.

Pittman, E. F. (1901), Mineral Resources of New South Wales; Rec. Geol. Sur. of N. S. W., Vol. 7, Part 2.

Pittman, E. F. and Maitland, A. Gibbs (1914), The Mining Fields of Australia; Federal Handbook of British Assoc. for adv. of Sci. Chapter 10. P. P. 416 to 460.

Porter, D. A. (1884), Notes on some mineral localities in the northern Districts of New South Wales; Jnl. and Proc. Roy. Soc. of N. S. W., Vol. 18, P. P. 75 to 80.

Porter, D. A. (1894), Notes on some Minerals and Mineral Localities in the northern District of New South Wales; Jnl. and Proc. Roy. Soc. of N. S. W., Vol. 28, P. P. 39 to 44.

Rands, W. H. (1899), Two new Garnet Localities; Ann. Prog. Rep. Geol. Sur. of Queensland, Publ. No. 150, P. 14.

Rennie, E. H. (1887-8), On some so-called South Australian Rubies; Trans. and Proc. Roy. Soc. of So. Aust. Vol. 11, P. P. 17-18.

Schmidt, A. (1891), Zircon, Almandin and Epidote in Australia; Zeit, Fur Kryst. and Min.; Vol. 19, Chap. 1, P. 50.

Smith, G. (1926), A Contribution to the Mineralogy of New South Wales; N. S. W., Dept. Mines, Geol. Sur. Min. Res. No. 34, P. P. 68 to 70.

Simpson, Edward S. (1927), Contributions to the Mineralogy of Western Australia; Jnl. Roy. Soc. West. Aust. Vol. 13, P. P. 37 to 48.

Simpson, Edward S. (1928), Famous Mineral Localities; Wodgina, North West Australia; Amer. Min. Sept. 1928, Vol. 13, No. 9. P. P. 457 to 468.

Simpson, Edward S. (1931-2), Contributions to Mineralogy of Western Australia; Jnl. Roy, Soc. W. Aust. Vol. 18, P. P. 61 to 69 and 75 to 82.

Simpson, Edward S. (1934), Contributions to Mineralogy of Western Australia; Jnl. Roy. Soc. W. Aust. Vol. 20, P. P. 47 to 60.

Simpson, Edward S. (1937), Contributions to Mineralogy of Western Australia; Jnl. Roy. Soc. W. Aust. Vol. 23, P. 47.

Twelvetrees, W. H. (1906), A geological Excursion to Port Cygnet; Papers and Proc. Roy. Soc. Tasmania for 1903 to 1906; P. P. 41 to 48.

Ulrich, George H. (1870), Contributions to the Mineralogy of Victoria; in Geology of Australia and New Caledonia by William H. Fitton and others.

Ward, L. Keith (1909), The Tin Fields of North Dundas, Tasmania; Tas. Dept. Mines, Bull. No. 6.

Woolnough, W. G. (1909), The General Geology of Marulan and Tallong in New South Wales; Proc. Linnaen Soc. N. S. W. Vol. 34, P. P. 782 to 808.

AN EPSOMITE OCCURRENCE IN THE TINTIC DISTRICT, UTAH

By FRED F. MEISSNER
1080 So. Gilpin, Denver, Colo.

(First prize winning article in the first earth science essay contest sponsored by the American Federation of Mineralogical Societies).

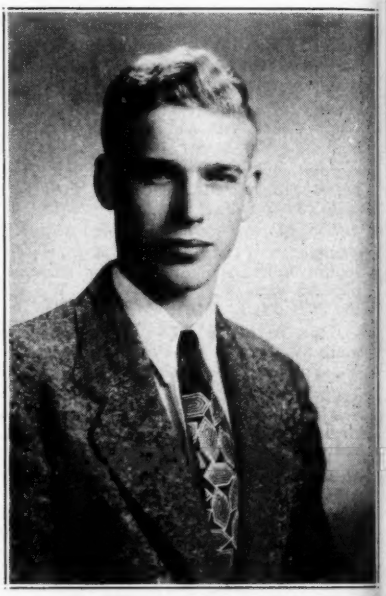
Nearly every student of mineralogy is familiar with the many rare and beautiful specimens which come from the Tintic Mining District in Utah. Dana lists many of the rarer arsenates and phosphates as coming from this locality, which is located about ninety miles southwest of Salt Lake City. The district itself takes in the area of a circle of about ten miles radius from Eureka, the principle town, and includes such famous mines as the Tintic Standard and the Mammoth.

Although there have been many large mines operating in the past, probably the largest working mine today is that of the Chief Consolidated Mining Company. It was in this mine that the author with several companions discovered a rather interesting occurrence of the mineral epsomite.

Epsomite, as might be suspected from its name, is pure epsom salts, defined chemically as hydrous magnesium sulfate. Although the mineral is chemically identical to the common drugstore medicine, it has a vastly different physical appearance. Instead of being granular in texture and coming in a box, epsomite occurs as a hairlike efflorescence, similar to fine crystals of mesolite, and is found as a secondary deposit in the tunnels and stopes of the mine.

In the operating tunnels the mineral has no opportunity to form, as the continuous blasting and vibration, which accompany hard-rock mining, jar and brush the hairs off the walls while they are still too small to be noticed. When, however, the tunnel is abandoned and the miners move on to new ore deposits, with their machinery and dynamite, the crystals have a chance to grow to their normal length.

The author first visited the mine in the summer of 1947, and after obtaining permission from the president of the company, Mr. Cecil Fitch, he was allowed to descend into the workings in company with his father, his brother, and his uncle, Mr. G. A. Franke. Mr. Franke, a past miner and leaser in the mine, acted as guide.



Fred F. Meissner

After inspecting the 1800-foot level, the party entered an abandoned tunnel and began to notice peculiar white, efflorescent formations on the walls. Mr. Franke appeared rather amused at the interest shown in the unusual formations which the local miners call "whiskers." The wall of the tunnel was weathered and oxidized and so, with the judicious use of a pick, flat slabs could be obtained with the hairs implanted upon them. As the epsomite was not too firmly attached, one had to give the roof of the tunnel wide berth or the falling hairs would

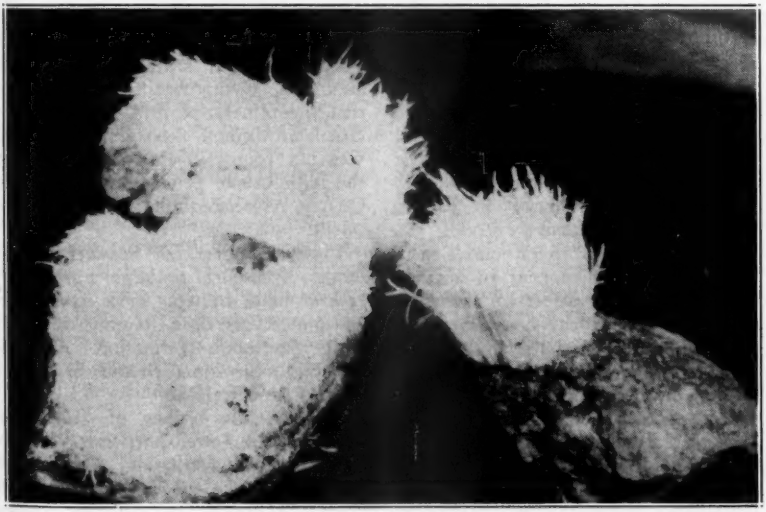
produce a sharp stinging sensation as they touched damp skin. This sensation was of course due to the astringent properties of epsom salts.

After returning to the surface the author was confronted with the problem of packing the epsomite for transportation home. The specimens are of such fragile nature that to pack them in cotton or in any conventional way will ruin them. The problem was solved by placing the specimens in a large box and cementing their bases to the bottom by pouring in a thin layer of hot paraffin. This system worked perfectly, as the author was traveling by car and could place the box in a protected place where it would not be jarred or overturned, although it would not be a good method for use in shipping by mail or express because it could not receive this care. Upon reaching their destination the specimens were removed from the box by simply cutting away the paraffin.

When first collected the specimens were unidentified, although it was suspected that they were halotrichite, as they were found under the same conditions as exist in the Alma Pyrite Mines in California where halotrichite is found. Later chemical analysis and petrographic examination, however, showed the specimens to be epsomite.

The specimens traded so well with other collectors that the author, in company with the well-known collector, Mr. G. B. Ellermeier, visited the mine again in the summer of 1948 on a return trip from the nearby topaz locality at Thomas Range. Although returning to the exact spot visited the previous year we were astounded to find in place of sparse groups of one-inch hairs, a miniature cavern lined with a mantle of sparkling, shimmering lace. The strands hanging from the roof were, in most places, two feet long and waved gently to and fro with every little draft in the tunnel. The whole spectacle was indeed a beautiful sight; truly a fairyland in which to collect. Unfortunately for the collector, however the longer hairs were destroyed at the slightest jar or attempt to remove them and one had to be content with three or four-inch hairs.

(*Continued on Page* 179)



Epsomite from the Tintic District, Utah. The mineral occurs as white hairlike efflorescences (called "whiskers" by the miners) on the walls of abandoned mine tunnels.

THE OCCURRENCE AND ASSOCIATION OF MILLERITE AND FLUORITE IN LIMESTONE QUARRIES OF THE ST. LOUIS, MISSOURI AREA

By JOSEPH A. SCHRAUT, Jr.

ABSTRACT

Millerite (NiS) and fluorite (CaF_2) occur as associated and unassociated minerals in various limestone quarries of the St. Louis, Missouri area. The millerite is crystallized as brass-yellow hair-like needles, coatings, and rhombohedrons in and on quartz, calcite, dolomite, and fluorite. The fluorite appears as purple and yellow cubes and masses in calcite, dolomite, limestone, and quartz. Millerite occurs in East St. Louis Quarry while fluorite is found in East St. Louis, Stolle, Ruprecht and Westlake Quarries.

Introduction

After finding massive geodes of millerite-bearing calcite in the East St. Louis Quarry at Falling Springs, Illinois, and fluorite in other quarries of the St. Louis, Missouri area, it was decided to group the localities of the two minerals into an article. The writer was for several years dissatisfied with the Dana description "St. Louis locality" on Page 239 of Palache, Berman, and Frondel's Volume One, Dana's System of Mineralogy. Millerite and fluorite will be discussed separately as they occur in various forms in different quarries.

Millerite

Rhombs, needles and coatings of millerite are crystallized in calcite geodes throughout the entire columnar section of St. Louis and Salem limestone exposed by the East St. Louis Quarry at Falling Springs, Illinois. Massive geodes, 18 inches to 2 feet and 60 to 85 pounds each, of dog-tooth calcite, appear in a blue-green limestone a few feet up from the quarry floor. The calcite has two stages of growth and contains the millerite in the second or latest growth as rhombs and fronds of crystalline needles. The first growth or original growth is plated with a micro-thin iridescent coating of nickel sulfide. Millerite also crystallizes in blue, yellow and white translucent fluorite, and in crystalline dolomite and secondary quartz associated with calcite nodules which are not geodic in nature but are sprinkled throughout the entire section. There is some pyrite in the secondary quartz.

Topographically, the area is in Karst topography. Ground water is prevalent. Seepage springs from the quarry face issue water at a rate of about five gallons per minute. Sinkholes are encountered while quarrying and are filled with Pennsylvanian sediments of shale and sandstone. Structurally, the quarry lies on the gentle-dipping northeast limb of the Dupo anticline. There are no mineral veins or faults exposed in or around the quarry.

Fluorite

Crystals and crystalline masses are associated with dolomite, millerite, pyrite, calcite, and secondary quartz in the East St. Louis Quarry. Blue fluorite also replaces scattered cup-corals in the upper portion of the quarry.

About one-half mile to the northeast and down the gentle dip of the northeast limb of the Dupo anticline, fluorite occurs as small but brilliant purple crystalline masses in the St. Louis limestone of Stolle Quarry, Stolle, Illinois. Here it appears associated with deep loess-filled sinkholes, giving rise to an assumption that the mineral-bearing waters arose or circulated through the sinkholes. Millerite was not found in the quarry nor were the large calcite geodes of East St. Louis Quarry. Associated mineral was crystalline calcite.

Fluorite appears in Ruprecht Quarry, Lemay, Missouri, as large purple-tinted yellow cubes in vugs of a recrystallized and mineralized dark dolomite of the flat-lying St. Louis formation. Associated minerals are twinned rhombs of dolomite and masses of calcite.

Small yellow cubes of fluorite are found in the lower portion of the flat-lying St. Louis formation being quarried by the Westlake Quarry, just east of St. Charles, Missouri. Only associated mineral is crystalline calcite. Occurrence is in isolated vugs in a fine-grained limestone

Summary

Millerite has been found at the present time only in East St. Louis Quarry while fluorite has been found in East St. Louis, Stolle, Ruprecht, and Westlake Quarries. Occurrence is not marked by any outstanding feature such as faults or veins. The millerite appears only in the St. Louis and Salem limestones of the Illinois side of the Mississippi River, but it is probable that it may be found in the Spergen equivalent of the Salem and in the St. Louis formation of the numerous quarries on the Missouri side. Fluorite appears in both the Salem-Spergen and St. Louis formations, regardless of color, although the yellow material tends to occur more in the St. Louis formation of both sides of the Mississippi River while the blue variety tends to appear in the Salem of the East side.

Since the millerite and fluorite occur in the limestone without any association with veins or faults, it was assumed that the origin of the two minerals was as stated by the System of Mineralogy to be "low temperature."

FULGURITES

By PAUL HURD

714 Columbia, St. Joseph, Mich.

(Second prize winning article in the first earth science essay contest sponsored by the American Federation of Mineralogical Societies).

Fulgurites are tubular objects of vitrified quartz fused by lightning in sand—sandy on the outside and often glassy on the inside. The glaze is really crude glass and may be bottle green. The color varies from salty white to dirty gray. In fact, they may be white at one end and gray at the other end.

I learned of these through Mr. Harvey Franz of Benton Harbor, Michigan. He and I go to the dunes of Lake Michigan together and hunt for them. The dunes where we hunt for them are in two areas on Lake Michigan. One is from Stevensville to south of New Troy. The other is from Riverside nearly to South Haven. These dunes have some vegetation on them, such as catbriar, sumac, witch hazel, wahoo, sassafras, or clumps of a tall grass which grows to a height over a man's head. Most of the dunes were originally forested, and trees which have been covered by sand occasionally blow out even yet. The fulgurites are found buried in the sand.

Fulgurites may be only a few inches long, but larger ones extend an unknown distance into the sand. Most of them descend vertically or nearly so, but an occasional one is found which descends at an angle, and a few have been found which were horizontal.

Some of them have branches or short stubs of branches, as lightning apparently branches as easily underground as it does in the air.

Fulgurites are to be found only in localities where the soil contains a high percentage of silica, but for some unknown reason many of the sand dunes do not have them.

While many of the fulgurites are very thin and easily broken, they may have walls nearly an eighth of an inch thick, and rarely smaller ones may be solid. Many of them are flattened by pressure exerted by the surrounding sand while the material was still plastic. The presence of the central cavity points to expansion of steam caused by sudden and extreme heating which may also cause swelling or burst bubbles on the tubes.

Their diameter varies from an eighth of an inch up to as large as an inch or more, but those larger than a lead pencil are rare.

No one knows how old they may be. The Encyclopedia Britannica says they are "imperishable," and there is reason to believe that many of them are hundreds of years old, while others may have been formed recently.

POUND OF TEA ISLAND, MAINE

By PETER ZODAC
Editor, Rocks and Minerals

Did you ever get a nice specimen whose locality intrigued you? I did and many of them. One of the latest such specimens which I received was a large and very fine crystallized epidote associated with rock crystals and whose locality was Pound of Tea Island, Maine. The specimen was sent me by Hugh A. Ford, the well known mineral dealer of New York City. Mr. Ford knows my fondness for localities so whenever he acquires specimens from out of the way places or new localities with strange sounding names, he sends them to me. This is how I happened to obtain the Pound of Tea epidote.

The locality intrigued me greatly and I tried to locate it in my volumous files on minerals but with no success. Letters addressed to some well known Maine collectors also met with no success—not one of them had heard of the island. Then the locality was listed in the July-August, 1949, issue of *Rocks and Minerals* under "World News on Mineral Occurrences," p. 360, and it likewise failed to produce even one letter from a reader. In the meantime I had been corresponding with Mr. and Mrs. Stephen Blake, of Kittery Point, Me., who only recently became interested in minerals. A letter from Mrs. Blake, received around June 15th, 1949, contained a short paragraph which excited me no end. It read:

"If you will visit us, we will take you to see Mr. Ike Skillin at Freeport, Me., who knows Pound of Tea Island and will guide us to it so that you may personally collect some epidote."

On Monday, June 20th, I "grabbed" a plane out of New York City (La Guardia Airport) heading north for Portsmouth, N. H., where the Blakes were awaiting me (Kittery Point is about 10 miles away).

The next morning, June 21st, we headed northeastwardly for Freeport where we arrived about 1:00 p.m. In Freeport, Mr. Skillin and his son, Edmund, own a mineral and antiques store which I visited and soon discovered that the Skillins are two of the nicest people one would want to meet. No wonder that Mr. E. Lawrence Sampter, in his yearly coverage on Maine minerals, always speaks highly of the Skillins. This coverage appears in *Rocks and Minerals* in the last issue of the year. The Skillins closed their store and both went with us to Pound of Tea Island.

We drove east from Freeport about 2½ miles then southwestwardly 3½ miles, the latter route went through a flat but nice country—a long, narrow, heavily wooded peninsula known as Wolf Neck. When we stopped it was because we could not go any further (except for about 100 feet) as we were on the shore of Casco Bay. A few houses were here and the settlement is known as Moore Point.

Just as we stopped the car it began to rain and how it did rain. It simply poured! The Skillins got out, however, to borrow a rowboat and in about 15 minutes Edmund was back for me—he had the boat and was ready to go. But it was still pouring and I was a little dumbfounded in being asked to go out in an open boat in that heavy rain. I had on a light sweater but this was no protection in the downpour. So I held back. Edmund was insistent that I go. Mr. Blake was willing and in fact jumped out, but I stayed in the car.

"Listen," said Mrs. Blake to me, "there is a cape of mine in the back, put it on and go, before the people will want their boat back."

"You don't expect me to be seen wearing a woman's cape, do you What will people think?"

"No one is going to see you! After all, who cares what they think if they do see you. You made this trip all the way from Peekskill, N. Y., just to see Pound of Tea Island—so get going!"

I put on the cape, jumped out of the car, and ran to the dock, where the boat was anchored. When I reached the dock, it stopped raining and never rained anymore for the rest of the day though it

threatened to any minute.

The dock, about 100 feet long, consisted of huge granite blocks which apparently had been brought there from some quarry, years ago.

The rowboat was a small one and only 3 could sit in it comfortably, so Mr. Skillin offered to remain behind—he would go clamming by himself. This being settled, Mr. Blake and I jumped into the boat and with Edmund at the oars, we headed southwesterwardly for Pound of Tea Island, a little islet about 1500 feet away, easily visible from the dock.

Casco Bay

The ride to the island gave me a good view of famous Casco Bay, a huge body of water on the southwestern coast of Maine. It is about 20 miles long and extends 12 miles inland. The largest city of Maine, Portland, is located on its western edge. Casco Bay contains about 300 islands, most of them small, which are popular as summer resorts. Among the many islands, Pound of Tea may be one of the smallest.

Map of the area south of Freeport, Maine, showing Pound of Tea Island, Wolf Neck, Moore Point, etc.

The water was very choppy, it was threatening to rain any minute, Edmund had quite a struggle to keep the boat moving, and there was a big doubt in my mind that we would ever reach the island. The weather was cold, too, but the cape kept me warm.

Pound of Tea Island

We finally reached the island and went ashore on its western side where there is a little "diggings" but which Edmund said was a natural depression. This depression is about 15 feet in diameter and 8 feet high, at its face. It is in this depression where the epidote is found.

The depression is in hornblende gneiss, and epidote occurs as thin veins in the gneiss. Very little of the epidote is now exposed and must be dug for, however, in the loose material of the depression we found a number of pieces, some of good quality, and some associated with rock crystals—but nothing as good as the specimen in my collection.

Edmund told me that he had discovered the epidote some years ago while on a mineralogical tour of that area; he had found many fine specimens and no doubt even the good one in my collection.

Edmund told me further that the island got its names from the fact that many years ago it was sold for a pound of tea. The island belongs now, he believes, to Mrs. MarieAhnighito Peary Stafford, who is known as the "Snowbaby*" because she was the first white baby to be born the furthest north of anyone known; she is the daughter of Admiral Peary, the famous Arctic explorer.

While Edmund and Mr. Blake were busy digging out epidote, I made an inspection of the island. The island is about 300 feet long, 150 feet wide, and 25 feet high (above the water). Its top is fairly level and covered with many spruce trees. It is uninhabited.

Minerals Found on the Island

Amphibole (*Hornblende*): Black, crystalline, as constituent of hornblende gneiss.

Epidote: Green, crystallized and massive, with long slender rock crystals. Some of the crystallized epidote is very good. Mr. Blake found a number of beautiful

drusy epidote, also some large platy masses of epidote which appear to be replacement after some other mineral (titanite?)

Muscovite: Small flakes in pegmatite pebbles, from the depression.

Quartz (*Rock Crystal*): Long slender crystals, with epidote.

Quartz (*Smoky*): A number of smoky quartz pebbles, up to 3 inches in diameter, were noted in the depression.

Hornblende gneiss, black and crystalline, is the rock of the island, at least it is at the epidote locality. Due to the threatening weather, we did not have time to thoroughly explore the island. Many of the pebbles found in the depression, and some of the nearby outcrops of gneiss, were covered with white and black barnacles.

*Mrs. Stafford was born in Greenland, at 77° 44' North Latitude. A very interesting account of her life in Greenland appears in her book, "The Snowbaby's Own Story," by Marie Ahnighito Peary, published in 1934 by Frederick A. Stokes Company, New York, N. Y.

INSIGNIA CONTEST FEATURE OF THE AMERICAN FEDERATION CONVENTION

At the request of the Convention Committee of the Mid-west Federation, host of the Convention in Milwaukee, June 28 to 30th, 1950, the American Federation is sponsoring a contest to select the most appropriate insignia to be used by members of the federated societies. Richard M. Pearl is managing the contest and is now formulating rules and regulations.

The insignia may be used by members of the societies for lapel buttons, pins, car stickers, etc. It is appropriate and desirable that a national emblem should be in use for it can make progress towards a greater degree of unity among the societies and individual members. Aside from this value, society members may readily recognize each other on their frequent jaunts about the country in quest of that elusive specimen.

Time permitting, final judging will take place prior to the convention in Milwaukee and pins and buttons will be on sale at the convention, otherwise, the final judging will be held at the convention.

DEEPEST MINE SHAFT IN NORTH AMERICA

Number 4 shaft at Lake Shore Mines, gold producer in the Kirkland Lake District of Canada, is now the deepest mine opening in North America. It has reached a point 7,500 feet vertically below the surface and will be carried to a depth of 8,000 feet. A neighboring mine, Wright-Hargreaves, was the previous record holder with a depth of 7,272 feet.

Compressed Air Magazine
Nov. 1949, p. 292

CONVENTION BULLETINS TO ALL MINERAL SOCIETIES

The Midwest Federation will send ten pre-convention bulletins to all societies, federated and non-federated. The bulletin will contain details of the program as well as interesting and pertinent information concerning the 3rd Annual Convention of the American Federation of Mineralogical Societies being held in Milwaukee. June 28, 29 and 30th. It is therefore to the advantage of every society to see that it is registered with Professor Junius Hayes, Secretary of the American Federation, in accordance with his recent request. His address is, The University of Utah, Salt Lake City, Utah.

Herbert Grand-Girard, Pub. Chm.
817 Mulford Street
Evanston, Illinois

COBALT, CANADA, MINES ARE BEING REOPENED

Toronto, Ont., Jan. 20, 1950—The Cobalt Chemical and Refinery Company, Limited, of Cobalt, Ontario, Canada, reported by the press (A.P., Jan. 17th) as having been awarded a substantial U. S. government contract for cobalt, announced this week that W. Arthur Wall, B.A. Sc., M. Sc., and Oscar Fischer of Denver, Colorado, have joined its staff.

Mr. Wall formerly directed research in the leaching process for production of cobalt metal by the Rhokana Corporation, Northern Rhodesia. He has also been connected with the Department of Mines in Ontario and British Columbia. He will occupy the post of Chief Technical Executive of the company's cobalt division and will locate permanently in Cobalt.

Mr. Fischer instituted the roasting technique used by Rhokana in their cobalt process. At present he is designing roasting furnaces for Rhokana's leaching cobalt production. He was also instrumental in solving the problems experienced in treating refractory ores of the Flin-Flon district in Canada. Altogether he has had 40 years experience with cobalt ores in the metallurgical field.

Mr. Fischer is now in Cobalt consulting with T. Nixon Bewsher, M.I. Mech. E., M.I. Chem. E., M.S.E., M. Soc. Ivg. Civ., of London, England, who is director of the Technical Division of the Cobalt Chemical and Refinery Company, Limited.

The Company's silver smelter is already in operation under the direction of John Johnson of Cobalt, who has long been recognized by Canadian mining technicians as an authority on refining this metal.

The cobalt division is expected to begin production at full capacity within the next six weeks after which the company's chemical division will be opened.

The company's plant, opened last November, is equipped primarily to produce industrial and agricultural chemicals and pharmaceuticals from cobalt, silver and nickel concentrates and the arsenical content of the ores. The arsenic, once a nuisance because of its high content in ores of the Cobalt camp, is now being converted into agricultural insecticides, weed killers, fungicides and other products for which there is a strong North American market.

Cobalt, 330 miles north of Toronto, is written deeply into Canadian mining history. From 1903 to 1918, it was the scene of an historic $300,000,000 bonanza. Later it lapsed back into almost a ghost town. In the interim, it survived two major epidemics and three devasting fires, one of which swept in from the bush and drove the entire population into Cobalt Lake.

Noted for its high grade silver deposits, the camp also has one of the few large cobalt deposits of the world.

Since World War I, cobalt has become a most versatile metal. Because of its heat-resisting qualities, it is used in the housings and turbines of jet planes and to harden tool steel and armor plate. Because of its magnetic qualities, it is used in magnets for telephones and other electronic equipment. It is also used as a drier and pigment for paints and varnishes, and to harden plate glass, condition cattle and fertilize land.

Little cobalt is produced in the United States. Most of the country's supply is imported from Southern Rhodesia and the Belgian Congo.

During its bonanza, Cobalt had forty-four mines. Most of these are now being re-opened.

Alabama Calling!

Editor R & M:

For the past two years I have had very little opportunity to spend much time on my hobby, however, like most other people I have tried to make a resolution for 1950 that I will spend at least one day a month going to some location where I may improve my collection. Being the only collector in this area, I have a monopoly on what I find but being the only collector makes it harder to get out on field trips than if there were a group to do so. If any collectors care to visit me, I will be only too glad to take them out to localities in this part of the State and I am sure they will find some interesting, if not uncommon, specimens.

G. B. Daniel
Radio Bldg. Anniston, Ala.

January 6, 1950

SAMPLING CAPE MOUNTAIN CASSITERITE

By LEO H. SATZ

I little realized when I hired out with the U. S. Bureau of Mines in May 1943 at the Fairbanks Office as "foreman sampler" that I would be "mining" ice with an Eskimo Crew, 60 miles from the coast of Siberia, looking for cassiterite in a mine abandoned since 1906.

Spring in Alaska is a time of accelerated activity, and was especially so during the war years. Jobs were plentiful and with the thaw everyone was anxious "to get back into the hills." All I knew about the job was that it consisted of sampling and prospecting for tin ore in the Seward Peninsula. With Paul Clayton and Jim Hulbert I hired out, all of us having just graduated from the School of Mines of the University of Alaska and still holding a few months left on our selective service deferments. The following six months provided me not only with the sampling and prospecting experience I was anxious for, but also made me feel at ease with the totally strange tundra landscape, partially acquainted me with what a hermit's viewpoint must be, and what was most interesting brought me into contact with a genuine native psychology whose proud self reliance could not fail to command respect, which was enhanced even more when contrasted with the degrading effects on the natives when they lived in urbanized communities under "white men's" conditions.

One of the major problems of the metal industries during World War II was the procurement of sufficient tin. With Japan's early conquest of the Malayan and Netherland's East Indies tinfields which supplied more than 50 per cent of the world's tin in 1939, Bolivia became the principal source of tin ore. The Bolivian ores consisted of lode cassiterite in additions to complex sulphides and were comparatively low grade. Smelting facilities were successfully established in Texas, but the demands of industry pressed hard on the available supply. For this reason the United States Government undertook exploratory and sampling investigations of American tin ore deposits.

The most important ore of tin, cassiterite (SnO_2), is characterized by its unusually high specific gravity for a mineral with non-metallic lustre (G-6.8-7.1) and its rare occurrence in commercially usable deposits. In all of North America the only known deposits of any promise were located in the Seward Peninsula, Alaska. These had been extensively prospected during the years following their discovery in 1900. Although mined for many years, the lode deposits always proved of limited extent. The recovery of stream tin, however, had been profitable along many creeks, but the easily worked deposits had been depleted.

In an effort to determine the reserves of Seward Peninsula ore both placer and lode, the U. S. Bureau of Mines in connection with the Strategic Minerals Program started an intensive sampling program in the summer of 1943, under the direction of H. E. Heide, mining engineer for the U. S. Bureau of Mines. The investigation was divided into four projects: diamond drilling of the Lost River area lode, supervised by Tom Christensen, Potato Mountain placer sample drilling supervised by Jim Hulbert, Cape Creek placer sample drilling supervised by Paul Clayton, and Cape Mountain lode sampling which was my assignment.

The Seward Peninsula is the nose on the west coast of Alaska separated from

H. E. Heide and 5 members of the Cape Mt. crew.

East Cape, Siberia, by the 60 mile wide Bering Strait. In the words of U. S. G. S. geologist A. Knopf who studied the region in 1907 "the western extremity of the continent is marked by an isolated mountain mass, known as Cape Mountain; which rises sheer from the water's edge to a height of 2,250 feet. This impressive promontory, usually swathed in chill fogs, forms the American portal of Bering Strait." It is 100 miles northwest of Nome and 40 miles south of the Arctic Circle.

The geology of the region has been described in the U. S. G. S. bulletins:

(B358) Geology of the Seward Peninsula Tin Deposits—A. Knopf (1908) 15 cents (still available).

and

(B733) Geology of the York Tin Deposits, Alaska—E. Steidtmann & S. H. Cathcart (1922) out of print.

The Peninsula is a very mineralized region characterized by granite intrusions in limestone. The intrusive is post-Mississippian, generally of a quartzose orthoclase composition, and a coarsely granular porphyritic habit. The tin ore deposits are associated with the granite whose "magmas were rich in mineralizers and produced an intense pneumatolytic contact metamorphism along their margins." The early prospectors were aware of this relationship as the numerous prospect pits on the mountain which faithfully follow the contacts prove. The occurrence of a fine grained distinctive blue tourmaline which occurred at the contact was invariably associated with prospect trenches. Fifty-two different mineral species have been identified in the region, including two new tin-boron minerals, Paigite and Hulsite, first discovered there by A. H. Brooks, the U. S. G. S. geologist who also first discovered the occurrence of cassiterite in the region. Some stannite has been found but cassiterite is the only tin ore of promise from the viewpoints of both tin content as well as extensively occurring deposits. The tin region has the form of a triangle whose base extends from Teller northward to Ear Mountain and whose apex is Cape Mountain.

At the southern base of Cape Mountain, on the beach, is Tin City. Tin City according to the early mine stock prospectuses was destined to become "The Singapore of North America." There are now only a few cabins there, in one of which I set up camp for about two months, plus the concentration plant of American Tinfields, Inc., which stopped their placer operations on Cape Creek and Goodwin Gulch during 1940.

I flew into Tin City from Nome with Tom Christensen. Tom was familiar with the region as well as with the Eskimos of Wales Village, the only inhabited settlement in the region which was six miles away north of Cape Mountain. His father was one of the active early prospectors of the region and he himself had been born at York. He oriented me, hired the men from Wales, and most important broke me in on the art of throwing a meal together. Two placer drillers, Otto Worm and Bill Bourgault who stayed with me for awhile put the finishing touches on my culinary skill and showed me the fine points of sourdough cooking and baking.

All of the Seward Peninsula is tundra. There are no trees or shrubs of any kind. Although it all looked like moss to me the Eskimo women knew where to pick a small green leaf which tasted something like radish leaves and served as salad. They also picked a small black berry which was very seedy and almost flavorless. During June and July colorful but tiny alpine flowers blossomed and the tundra became alive with birds nesting there. Enormous sulphur yellow and bright orange litchens, a foot in diameter, were common on some of the granite boulders. Two types of weather predominated, bad and very bad. Wind was constant and invariably either north or south. The continuous whistling of the wind while up on the mountain sometimes set my nerves on edge and I'd find refuge from the whistling behind a rock to eat my lunch even if it meant lying prone while I ate. Rain wasn't excessive, although it was constant during the last two weeks of July, while dense white fog was a constant companion of the south wind. A shift of the wind from the

north to south could change crystal clear weather into a fog in which visibility was reduced to practically zero, all within five minutes. The few clear days I remember were extraordinarily beautiful. While the sun had little warmth, it brought out unsuspected golden hues of the tundra, and revealed a rich ultramarine sky. The vista from Cape Mountain across the flat valley to the blue and purple York Mountains seemed worth a month of fog although I'd change my mind the very next foggy day. On these rare clear days, the snowy slopes of the mountains on East Cape, Siberia, could be plainly seen. As Tom liked to point out, from Cape Mountain, one could see two days, two continents and two oceans.

Besides bulldozing and sampling some surface prospect trenches my duties consisted of the sampling of the Bartell Mine. This mine had been abandoned in 1906 after approximately 1,000 feet of drifting along three levels had been accomplished. The entrance to the upper level, known as the North Star Adit was blocked by ice, except for a 2' x 2' opening. The walls of the drift were covered with a luxuriant growth of ice crystals for about 300 feet along the drift. The crystals extended almost perpendicular from the drift wall in the shape of thin hexagonal plates. The largest crystals occurred about 100' from the portal and attained a diameter of 6". They were dry, transparent, very sharp and tinkled like glass bells. The drift resembled a jeweled ballroom when the crystal facets flashed back the light from a carbide lamp. Icing conditions were common in Alaskan drifts but I have never seen such spectacularly perfect ice crystals as in this one. The portal of the lowest level had caved and prevented the draining of seepage water. This water accumulated and froze so that the first 20 feet of the adit was plugged solid with ice like a tight fitting cork. Before sampling could be started, the walls had to be cleared of ice and the lowest portal opened so that circulation could start and help melt the tough ice film from the walls. Experience later proved that melting was variable, depending on weather conditions. Sometimes the ice crystals regrew on the walls in a matter of days.

Clearing the mine of ice and re-opening the low level portal took almost three months of work, while cutting the channel samples themselves only a little more than a month. The mine crew consisted of six Eskimos from Wales Village. One thing which never failed to amaze me was the constant happy disposition of these men. Although they lived in a region which to me was barren and unhospitable, in a climate of eternal wind and dampness subject to long vicious winters, and where the provision of sustenance and shelter occupied all their time and was gotten with great exertion, their attitude resembled nothing so much as a bunch of happy college boys out on a spree. Working underground was a new experience to them which took some salesmanship on my part. For themselves, they are very hard workers, but on a wages job, they will exert only the minimum effort unless you set the pace and keep it.

As with most native hunting peoples, they are very proud and sensitive of their manliness but my attempt to use this characteristic as a lever for getting a better days work from them resulted only in resentment. Only by working alongside of them could I get results. My standing as "boss" meant very little. This was irksome to me as I loved to hike over the mountains, examining the old prospect trenches and adits, and keeping my eyes open for any significant mineralization, but I had to chuckle to myself when I saw that they wouldn't bite at the bait. Yes, "Eskimos, him plenty smart." I settled for a compromise pace and considered myself lucky.

All of them were expert in recognizing cassiterite either as float or as stream tin which occurred much more commonly in Cape Creek. Yet I had heard of only one native who had ever gone in for prospecting in the early days of the prospecting boom. The stream tin was usually in the form of black rounded pebbles, but the color varied from browns all the

way to pale yellow especially in the well crystallized float specimens. I have seen at the Smithsonian Institute Museum a boulder of cassiterite that had been found in Goodwin Gulch, which is reported to be the largest single nugget of stream tin ever found.

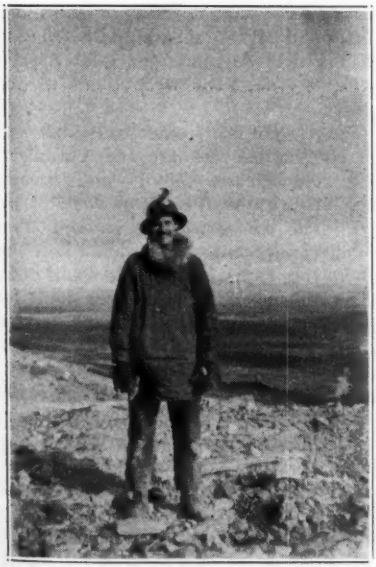
Channel samples were cut from every promising formation but almost no cassiterite specimens were found in the mine except in a highly altered contact gouge. Some promising veins were found in the prospect trenches whose sites had been selected by P. L. Killeen, a U. S. G. S. geologist, but more work was required to disclose their extent, which I understand was carried out during the summer of 1944.

Although the crew took the de-icing and prospect trenching in their stride, they didn't quite get the hang of cutting the channel samples. It called for a lot of explaining, using the weirdest kinds of analogies to impress on them the importance of cleaning the walls properly, and keeping the samples unsalted. My harping on the importance of proper channel cutting had its disadvantages though as they would sometimes go to the extreme of moiling the channel so accurately and smoothly that you'd think a sculptor had spent a week on it.

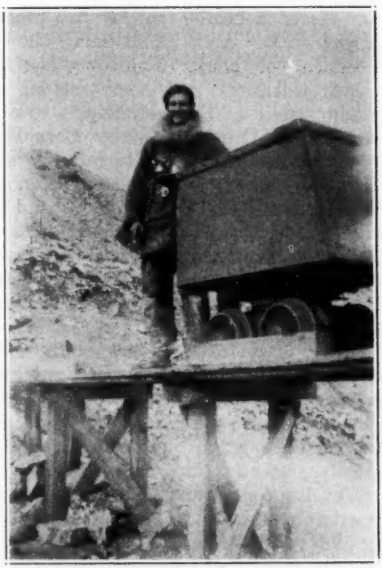
After completing the sampling program, a month was spent in Nome preparing the samples for assaying and drawing a map of the sampling locations. The promising mineralization remains intriguing and the region fraught with potentialities. Who can say whether the miner's proverbial "two feet more' of drifting in the North Star adit would not have disclosed the lode which was mother to the extensive and profitable placer deposits of Cape Creek?

Although the "Singapore of North America" remains a dream, the ruins of the old stamp mill near the beach and the fresh scars of the prospect trenches on the slope testify to the tantalizing prowess of Cape Mountain still "swathed in chill fogs."

L. H. SATZ
205 Union St.
Schenectady 5, N. Y.



The author outside the Bartell cassiterite lode mine. Cape Creek and the York Mts. in the background.



The author on a trestle built to remove the ice from lowest adit of the Bartell Mine.

MORE NOTES ON ORCHARD HILL, ELMSFORD, N. Y.

By EVELYN WAITE
242 Scarsdale Rd., Crestwood, Tuckahoe 7, N. Y.

I was interested to read the short article in a back issue of *Rocks and Minerals* (January, 1948, p. 22) regarding the possibilities of the dumps at Orchard Hill, Elmsford, N. Y., also the Editor's note regarding my former article on the locality. (New localities in Westchester County, N. Y., *Rocks and Minerals,* Oct., 1940, pp. 326-329).

A couple of years ago I prepared another article on this locality but never got around to sending it in.

In the fall of 1948, in discussing this spot with a few rockhounds, the writer was told there was nothing there anymore, not even rose quartz of which there had been a quantity. One day, however, we stopped there for a short time and found that much digging and carting away had taken place changing the appearance of the place considerably so that at first we could find nothing familiar, but shortly we began to find some interesting specimens. There were quantities of good rose quartz still present, in large and small pieces, even better in quality than we had found in the past. Also found some showy specimens of black tourmaline crystals (some radiating) and some making a graphic effect in the pegmatite — very attractive). Drusy epidote in considerable quantities, some nicely mixed with orange feldspar (like unakite); dumortierite, various feldspars, garnets, and a large quantity of beautifully banded shale in parallel bands and wavy distorted patterns, in all colors or shades from white and cream through greys to black. It was in large masses up to almost 2 feet in diameter. My little nephew really discovered this beautiful shale for he called out that he had found agate; of course we hastened to look at it and we could readily see how he had made his mistake.

We also found some orange feldspar crystals on the side of a large rock mass but did not have time to remove them. On Oct. 23rd, 1948, we again visited the dumps long enough to remove these crystals.

On Oct. 26th we made another trip and got more rose quartz, epidote, dumortierite, tourmaline, and a small amount of green diopside with molybdenite such as was so very plentiful a few years ago. This time we found that a steam shovel had been on the job so it was almost a new locality again. Some of the banded shale we found this time had minute crystals of pyrite in it and also some coffee-colored hair-like clusters which we have not as yet identified.

Several weeks later I again visited the locality with a new rockhound, Guenivere Pendray, and we found a new mineral for the locality, at least to us — metallic and red hematite in pieces up to the size of a hen's egg, also some of the more granular type. We had spent an hour or two walking about the dumps without finding too much of interest, certainly nothing special, when we came to a large reddish brown spot which looked as if someone had thrown a large pot of red paint over everything, staining rocks, dirt, sticks and all — a dark red. On close examination we found the shiny metallic hematite specimens very plentiful and bright.

There were many other rocks that were merely stained with the red, but plenty that were hematite through and through. The majority of the pieces were of the size used for gravel or crushed stone for driveways and we wondered how and where they came from. One could easily see what material the Indians used for their red warpaint but why we never saw it here before, I can't imagine. (The material came from a nearby aqueduct tunnel; apparently a deposit of red earthy hematite was struck, thrown on the dump and covered up before Miss Waite had a chance to see it.—Editor).

Many happy digging hours have been spent at this spot and I agree with Mr. Sabine (author of the little article in the Jan. 1948 issue) that it is an interesting and profitable hunting ground for amateurs and for more experienced collectors, also.

I am attaching a list of most of the specimens we have obtained from these dumps and which are on display in my garage, in case anyone should be interested.

1—Actinolite—dark green.
2—Apatite—green crystals.
3—Augite.
4—Calcite—massive, granular, cleavage, and crystals.
5—Chalcopyrite.
6—Diopside—green, bladed.
7—Dumortierite.
8—Epidote—mostly drusy crystals.
9—Feldspars (microcline, oligoclase)—white, orange, gray, yellow, pink, green, transparent and purple.
10—Fluorite—tiny streaks and stringers.
11—Garnet—minute and larger—plentiful at times.
12—Hematite—red stains on other minerals, also massive and metallic, and some granular.
13—Hornblende.
14—Limonite—earthy as yellow ocher, as crystals pseudomorph after pyrite, also as stains on other minerals.
15—Mica—biotite, muscovite, phlogopite, sericite.
16—Molybdenite—crystals and as stringers and lumps in diopside.
17—Pyrite—various shapes of crystals and masses.
18—Quartz—massive and crystals—clear, white, smoky, black, rose, green, and iron-stained.
19—Serpentine—green and black.
20—Tourmaline—brown, black crystals.

Rocks—gneiss, limestone, mica schist, pegmatite, and shale (gray and white, banded).

Editor's Note: The material in the Orchard Hill dumps came from Aqueduct shaft 20, and its tunnels (now abandoned) that were dug about 10 years ago for the New York City water supply.

AERIAL FIELD TRIP PLANNED FOR THE AMERICAN FEDERATION CONCLAVE

Those attending the national convention of the American Federation of Mineralogical Societies at Milwaukee, Wisconsin, June 28, 29, 30th, will have the opportunity of seeing the outstanding features of the Wisconsin geology from the air. Arrangements are being made to charter two 21-passenger DC-3 planes used on regular scheduled flights for about a two hour trip.

Those taking the air tour will see the famous Devil's Lake region, which has been termed a geologist's paradise. What occurred here in the past with reference to glaciation can best be understood by viewing the area from the air. Comparing the glaciated area of Wisconsin to relatively small unglaciated area is another outstanding aspect of the trip. The Dells, the Drumlands from the Green Bay lobe, and a bird's eye view of the Kettle Moraine country should be especially interesting. A tour director, familiar with the geophysical aspects, will be on each flight. Each person registering for this unique geological field trip will be given a map and the group will be briefed on the terrain.

The cost of this flight per person will be considerably less than the usual air travel rate, and is not expected to be over $12. Reservations for this trip (probably Saturday, July 1) may be made during the first day of the convention, or insured by writing beforehand to W. C. Miller, 1611 E. Royall Place, Milwaukee 2, Wisconsin.

Plans have been made for the most interesting programs in the mineralogical, lapidary, geological, paleontology and dealers divisions. Speakers for the general programs are outstanding in their fields. The aerial field trip is but an indication of the efforts being made by the planning committee to make this the most worthwhi'e convention to date.

Herbert Grand-Girard, Pub. Chm.
817 Mulford Street
Evanston, Illinois

ROCKS AND MINERALS OF THE MOON

By JEFF HILL
1936 Smallwood Dr., Raleigh, N. C.

The side of the moon facing the earth has been pretty well mapped and its configurations named and numbered. But, more than this, its geology has been computed with much conjectural thoroughness. Decades from now terrestrial geologists and mineralogists exploring the moon in cumbersome space-suits may not meet with many surprises.

Most of the conjecture, however, has not been very heartening: there may not be any critical mineral deposits closer than several thousand feet from the moon's glaring surface. We will soon explain why this must be so.

There are no rivers, rains, clouds, or winds on the moon because of the absence of atmosphere, but there is yet a weathering agent a thousand times more vigorous than these, constantly at work on the surface: that of intense meteor bombardment. It is estimated that about 70,000 meteors strike the moon's surface per hour, and each of these with bullet-like velocity, there being no layer of atmosphere to cushion the fall or to burn them by friction; the average crater from each meteor is estimated to be about 25 feet across. And when one considers that a single iron meteorite the size of a barrel striking the moon at this velocity is capable of fusing a mass of silica the size of a two-story building, one begins to appreciate the destruction this must cause.

It is then obvious that during the moon's existence as a member of our solar system its surface must have been melted and remelted many, many times until there is perhaps nothing left of its original character. This is, however, more true of the reverse side of the moon than of the side nearer the earth, as the earth's mass somewhat shields the nearer side from meteor showers. Through a telescope, the other side of the moon (the 41% which we never see) would doubtless appear much more pitted and scarred than the side facing us, although we are certainly able to see a myriad of these craters on our side.

This melted and remelted surface material probably reaches a depth of several thousand feet below the surface, and the heavier minerals which were originally near the surface must by agitation and liquification have settled into concentric layers deep below the moon's surface, leaving the lighter (and less valuable) minerals nearer the top.

Since the moon is generally thought to be a fragment of the earth dislodged during the formation of our solar system, the minerals of the moon would logically be those of the earth. Thus, by consulting our familiar specific gravity tables we should find the minerals and their elements listed in the order in which they would occur in layers on the moon, and by knowing the percentages of abundance of these minerals on the earth we could reason that the moon by its smaller size would have one-sixth the supply.

It is not so simple as this, however. Since the moon does not contain water, we must modify our findings. Another consideration is the fact that the moon's surface element, silica (which is also its most abundant element), is not in the form of the solid mineral, quartz. Because of its rapid fusion by the intense heat from meteor impacts it must resemble the fused coconino sandstone from the Great Meteor Crater of Arizona: white, porous, light-weight, resembling pumice. This material (called *lunite*) is further broken into dust and sharp fragment rubble by the expansion and contraction caused by the moon's extremes of temperature. The surface porosity of the moon adds much volume but very little weight to the over-all mass, decreasing the over-all density considerably. When all computations are made, including purely astronomical ones, the moon is found to have a density 3.57 times that of water, or 0.63 that of the earth.

Lunite corresponds to pumice not only in appearance but also in its relation to parent rock. Pumice is silicious volcanic ash—the "seafoam of silicious oceans." Far from being completely covered over

by lunite, the moon's surface shows large solidified "seas" of comparatively smooth, perhaps faintly transparent silica glass—a result of slow but large-scale fusion. These "seas" are seen even to the naked eye as dark areas. Two easy guesses as to why they appear dark are that they contain mineral admixtures which render them a dark hue, or, the smooth glass surfaces perhaps reflect the blackness of outer space.

We may be sure that the moon's surface also contains metallic dust particles and fragments from exploded meteorites which lie about the surface in a free state and also as an admixture in the glass and lunite. We can also assume with some degree of certainty that some of the moon's surface material is occasionally blasted far out into space by meteor impact. It is even possible that some of this material could have come within the earth's gravitational field and thus have reached the earth. But would we recognize it if we saw it underfoot? We know that it would be predominantly silica in the form of glass pebbles and would be likely to contain small percentages of metoritic iron, nickel, etc., and, due to fusing while passing through the earth's atmosphere, it would perhaps be darkly colored by this meteoritic metal content—a black, dark brown, or dark green color. And this is, perhaps by more than coincidence, the description of a *tektite.*

Are tektites really fragments of the moon? Some scientists believe so. It is at least an accepted fact that they are of extraterrestrial origin and that they do not correspond to any known meteorite physically or chemically. On the other hand, they correspond exactly to science's conjecture of the moon's surface material. But perhaps the question will never be answered to everyone's satisfaction.

Some day, many decades from now when many trips to the moon have been effected, all mineral collectors will be able to boast of having specimens from the moon; but, until that time, those collectors today who are fortunate enough to own a tektite can at least boast of the *possibility* that they possess *a piece of the moon!*

ATTENTION NORTH CAROLINA COLLECTORS!

Are you interested in forming a state mineral society? If you are a collector or in any way interested in minerals, you are urged to give this worthy movement your hearty support. To do this, or if you want more information, contact C. Henry King, Box 109, Franklinville, N. C.

Mr. King is staging a drive to form a state society and needs the support of all Tarheel collectors. A small bulletin, *Carolina Mineral Notes,* is being published by Mr. King and issued free. Send for a copy, have him place your name on his roster, form the club, and then boost both the club and the state's minerals. Adopt the slogan of *Carolina Mineral Notes*—"When it comes to minerals, North Carolina is Nature's Sample Case."

An Idle Thought About R & M

Editor R & M:

R & M is very much like whiskey in that every year it gets better. After a little you want more. I have every copy mellowing in my oaken book case. Better than whiskey, every month I have more than before and yet I have devoured it all.

Bill Nisson
Petaluma, Calif

February 9, 1950

GEORGE R. HOWE

(Obituary Notice)

George R. Howe died at Norway, Maine, after three years of failing health.

Born in Norway, Maine, August 4, 1860, he was graduated from Tufts College in 1882. He had held many positions of honor and trust but was best known as guide, philosopher and friend to many thousands of people all over the country. He was a keen mineralogist, too, and had a wide knowledge of the many mineral localities in Maine and elsewhere. He identified the first rose quartz crystals at a time when the books denied their existence and was the first to name the well known "watermelon" tourmalines. He discovered the royal purple amethyst at Pleasant Mountain in Denmark, Maine, and they have never been excelled for rich color.

Mr. Howe will long be remembered and mourned for his unfailing willingness to help any and all who came to him about locations or methods of identification of minerals. I had known him for many years and valued him highly as a friend and counselor.

Charles F. Marble

WORLD NEWS ON MINERAL OCCURRENCES

Items On New Finds Are Desired. Please Send Them In.

Alabama—J. R. Lee of Bridgeport, Ala., reports that he has had cut a few rock crystals, also pale smoky crystals, from the Center, Cherokee County, Ala., locality and that they are very good. This locality was mentioned in the July-August, 1949, issue of R & M (p. 358).

"Two other localities in Alabama might be of interest to readers," he writes. "They were reported in Mineral Resources of U. S. 1914.

"Agate: or a chalcedonic chert of a dense grain, similar to novaculite, in lumps, varicolored red, yellow, gray, from a small mountain southeast of Gurley, Madison County.

"Beryl: as light golden crystals, fractured but gemmy, from near Hissop, Coosa County."

Arizona—A letter received from Paul O. Drury, Las Vegas, Nev., publicity director of the Clark County Gem Collectors, carried the following paragraph.

"I am taking the liberty of forwarding you a specimen of the selenite which lies exposed on the south shore of our Lake Mead, and being the same identical material of which our members secured a half-ton block as a club display for our mineral show on November 11, 12, and 13, 1949."

The specimen received was a beautiful colorless selenite, 4 x 7 x 1¼ inches thick. The locality is the south shore of Lake Mead, Mohave County, Ariz.

Another letter from Mr. Drury contained a map and directions for reaching three localities, of which the Lake Mead selenite is one. Directions for reaching this locality are as follows:

This trip will take all day and we suggest that you leave as early in the morning as possible. Total round trip mileage is 143. Drive out Fremont Street in Las Vegas to Boulder City and on down to Hoover (Boulder) Dam. This is 31.4 miles. After you cross the top of the Dam, continue on the main highway for another 20 miles until you come to the sign reading "Bonelli Landing." Turn left on the dirt road and continue to the lake—another 20 miles. DO NOT DRIVE YOUR CAR RIGHT UP TO THE WATER'S EDGE. Stay back about a block or two. Park and lock your car. Stay as close to the water as possible—and walk EAST about 1½ miles. You cannot miss the selenite as it shines and glistens in the sunshine and may be seen for quite a ways before you reach it. There are several exposed veins about 3 or 4 feet wide that run for approximately ¾ mile in an east and west direction. A cold chisel or crowbar may come in handy.

Arkansas—Light brown unctious masses of fossil laurel wood (petrified wood) are found 3 miles west of Piggott, Clay County, Ark.

California—A new California mineral is perovskite, a calcium titanate. The mineral, as sharp brilliant black crystals on matrix, was recently found in the vicinity of the Gem Mine (benitoite locality), San Benito County, Calif. A description of the occurrence by L. Ph. Bolander Jr., appeared in the February 1950, p. 65, of *The Mineralogist* (329 S. E. 32nd Ave., Portland 15, Oregon.)

Colorado—An occurrence for triboluminescent sphalerite is a lead-silver mine in the Silverton district, San Juan County, Colo. The mineral occurs as dark gray (almost black) granular masses associated with lustrous fine crystalline galena and a litte chalcopyrite and milky quartz. A triboluminescent mineral is one which gives off sparks when scratched (best seen in the dark).

Connecticut — One of Connecticut's most attractive minerals is cyanite from Judd's Bridge, Litchfield County. Large bladed crystals of excellent quality, from greenish to deep blue, have been found in a milky quartz vein about ½ mile north of the bridge (Judd's Bridge), 175 feet above the road on the east side of the Shepaug River. The locality, a pit about 20 feet in diameter, is 300 feet north of

the power line which here crosses the road.

Charles G. Lotz, of Meriden, Conn., informs R & M that the old Cheshire copper mines, at Cheshire, are now posted with "No Trespassing" signs.

Delaware—Large dark brown masses of cellular limonite have been found on the property of Eugene VanderWender, Harrington, Kent County, Del.

District of Columbia—French Morgan, of Washington, D. C., sends in this interesting note:

"I have made another very unusual find of petrified wood, in the District this time, and within a half mile of where I live. It is well wormbored, entirely covered with drusy quartz, and in addition has what I call double cone formations with radiations from the center."

Florida—Petrified bones of excellent quality, reddish brown with grayish crust and more than 2 inches long, have been found by Mrs. Rena Allen, of Daytona Beach, Fla. The locality is a limestone quarry near south of Bradenton, Manatee County, Fla.

Georgia—A large brown specimen of jasper, from Flint River near Albany, Dougherty County, Ga., is on display in the State Museum, Atlanta, Ga.

Idaho—Good specimens of crystallized malachite, with calcite, occur in the Valley View copper mine, So. Skull Canyon near Winsper, Clark County, Idaho. This mine is operated by G. Elmo Shoup, of Salmon, Idaho, who donated a nice specimen.

Illinois—A letter from Donald Stanley, of Chicago, Ill., carries the following interesting information:

"My friends and I do quite a bit of prospecting around Chicago for fossils, minerals, glacial pebbles, and anything of interest. While minerals are rare here, we do find nice crystals and oddly shaped concretions of marcasite. Various fossils are found locally in the Silurian limestone (Niagaran formation). All sorts of rocks are found in the glacial drift. I found a piece of mica schist full of red garnets, also interesting vein specimens, oddly patterned porphyries, oil shales and many which have me completely stumped. A friend of mine found a piece of gray quartz with native gold, in the glacial heaps along the drainage canal. This is all in the immediate vicinity of the city."

Indiana—Beautiful colorless crystals of selenite are found in the Floyd Knobs quarry near New Albany, Floyd County, Ind.

Iowa—Nice waterworn pebbles of gray to reddish to brownish ribbon agate are found at Clarinda, Page County, Iowa.

Kansas—Gray pebbles of chalcedony are found at Greensburg, Kiowa County, Kansas.

Kentucky—White cleavable masses of calcite, white to purple masses of fluorite, lustrous cleavable masses of galena, and deep brown crystalline masses of sphalerite occur in the Davenport fluorite mine, near Marion, Crittenden County, Ky.

Louisiana—Beautiful opalized wood occurs near Leesville, Vernon Parish, La. A letter from Lovett Word, of Leesville, gives this information:

"This opalized wood was discovered by me, and my brother, J. H. Word, 15 years ago while making a detailed survey along the Catahaula-Fleming contact zone. The discovery bed gave up some colorful pieces of red, blue, brown, black and gray, yet no precious opal was ever found. Only one log, about 20 feet long and 18 inches thick, of golden opalized wood was found and it with other colored stuff is now exhausted except what is in our possession.

"The find was in a silicious clay of variable thickness and analyzing in some instances 79% silica, probably being a definite horizon as it extends in a belt across west-central Louisiana.

"Many detailed surveys have revealed only the one locality of opalized wood. Depth might tell a very different story but surface deposits 10 feet thick on all outcrops along the strike give only the mute evidence as herein mentioned."

Maine—Ernest C. Fairbanks, 10 9th Street, Old Orchard Beach, Me., sends in this bit of information:

"Visited Prof. Cleaveland's original opening from which he furnished so many museums with gem quality garnet crystals. Found a few, also some of the largest axinite crystals I have ever seen. Plan

to blast here later."

Collectors visiting Maine can secure the services of Mr. Fairbank's as guide to some of the interesting mineral occurrences in his state.

Maryland — Long bladed olive-green masses of zoisite, on gneiss, are found in the Milford trap quarry, northwest of Baltimore, Md.

Massachusetts—Large chocolate-brown crystals of titanite in massive milky quartz are found at the trap rock quarry in Winchester, Middlesex County, Mass.

Michigan—A locality for molybdenite in Michigan is the Ropes gold mine near Ishpeming, Marquette County. The mineral is of rare occurrence, however, as only a few specimens are known. A specimen consisting of small molybdenite masses in massive smoky quartz has been donated to R & M by Don Gabriel, of Detroit, Mich.

Minnesota—Gray masses of oolitic quartz are to be found near Winnebago Faribault County, Minn. The locality is an old Indian battlefield along the bank of the Blue Earth River near Winnebago. A number of specimens of the oolitic quartz have been donated to R & M by A. F. C. Heiser, of Fairmont, Minn.

A letter from Mr. Heiser dated Oct. 2, 1949, had this paragraph:

"I contacted a local collector of Indian relics who has acquired quite a collection and quite a local name for himself and he tells me that the Indians brought the gray oolitic quartz to the Blue Earth River from North Dakota."

Mississippi—Amber, soft and brittle, gray to yellow color, and chiefly opaque, has been found in the Tuscaloosa clays near Paden, Tishomingo County, Miss.

Missouri—Good lodestone has been found on Iron Mountain, Madison County, Mo.

Montana—Zircon sand, which fluoresces orange under the Mineralight, is found in Basin Creek, Basin, Jefferson County, Montana.

Nebraska—Quartz concretions, as small balls, loose, brownish, have been found in Lincoln, Lancaster County, Nebr.

Nevada—Nice bluish masses of chalcedony are found in the Monte Cristo Range, Esmeralda County, Nevada.

New Hampshire—Nice crystalline lavender masses of lepidolite occur at the Chandler feldspar mine near Raymond, Rockingham County, N. H. The locality was visited by your Editor on June 22, 1949, along with Mr. and Mrs. Stephen Blake, of Kittery Point, Me.

New Jersey—Thin brown slabs of limonite after wood have been found at Belmont, Cumberland County, N. J., by R. K. Greenwood, of Elmer, N. J.

New Mexico — Good specimens of olive-green olivine-augite bombs up to 10 inches in diameter, are abundant in Kilbourne Hole, a large sink-hole, which lies approximately 35 miles southwest of Las Cruces, Dona Ana County, N. Mex. A most interesting article on the locality, "South-Central New Mexico's Sink-Holes and Craters," by Alfred M. Perkins, appeared in the Dec. 1949, (pp. 3-11) issue of the *Earth Science Digest*, Revere, Mass.

New York—Small black crystals of spinel, with chondrodite, occur in a white crystalline limestone ledge, at Lower Twin Lake, Bear Mountain Park, Orange County, N. Y.

North Carolina—Very good specimens of black, massive uraninite with gummite (orange) and uranophane (yellow) occur at Gusher Knob, near Ingalls, Avery County, N. C.

North Dakota—Loose crystals of selenite, over 2 inches long, are found at Heart River, Grant County, N. D.

Ohio—We who are accustomed in seeing limestone deposits worked as quarries, often huge workings, may be interested to learn that there is a limestone mine in Barberton, Summit County, Ohio. The limestone bed, 345 feet thick, is opened up by two vertical shafts 550 feet apart and 2200 feet (nearly ½ mile) deep. The mine is operated by the Columbia Chemical Division of the Pittsburgh Plate Glass Co. The limestone is solid with no cavities, and the only mineral seen is chert which occurs as small veins. The limestone overlays 200 feet of gypsum and gypsiferous shale.

Oklahoma—Waterworn pebbles of dark brown petrified wood are found in the agate field, 6 miles east of Mangum, Greer County, Okla. Ash Lovett, of Mangum, has sent R & M several specimens of these pebbles.

Oregon—Nice specimens of grayish chalcedony pebbles are found in the sand dunes of Winchester Bay, Douglas County, Oregon. A specimen of the chalcedony, together with some of the dune sand, was sent R & M by C. O. Morgan of Winchester Bay.

Pennsylvania — A noted locality in Pennsylvania was the old iron mine on Fritz Island (in the Schuylkill River) 2 miles south of Reading, Berks County. Bill Reger of West Reading sent in this note on the locality.

"Fritz Island is now the site of the Reading disposal plant and is also being used for dumping coal silt from the Schuylkill River. I have managed to get a few specimens of serpentine, carnelian, limonite and manganese minerals from the eastern and southern end of the island."

Considerable excitement was created recently, around Pittsburgh, Pa., by the finding of uranium ore in the grading for the new William Penn Highway, Route 22, within 35 miles of downtown Pittsburgh, in hills located between Delmont and New Alexandria, in Westmoreland County.

Mr. and Mrs. Howard V. Hamilton, of Vandergrift, Pa., who visited the locality, report:

"Regarding the uranium minerals near Pittsburgh—we looked over the road cuts where the stuff was supposed to be found but could not find anything unusual or that we could recognize as such minerals."

Quite a write-up on the occurrence, with 3 large illustrations, appeared in the Sunday, October 16, 1949, edition of the *Pittsburgh Sun-Telegraph.*

Rhode Island—Lustrous plates of hematite in a dark green schistose rock, have been found at Hughesdale, Johnston, Providence County, R. I.

South Carolina—Slender black crystals of tourmaline in massive milky quartz have been found at Kings Creek, Cherokee County, S. C.

South Dakota—Small black masses of uraninite with autunite and gummite in muscovite, occur in the Ingersoll Mine at Keystone, Pennington County, S. D. A nice specimen, containing all 4 minerals, was sent R & M by Black Hills Minerals, Rapid City, S. D.

Tennessee—Small crystals of celestite have been found in the limestone at Nashville, Davidson County, Tenn.

Texas—A locality for good aragonite crystals is Palo Duro Canyon, Armstrong County, Texas. It was through the efforts of Mr. Lem H. Tittle, of Mangum, Okla., that the mineral was brought to the attention of collectors, about 14 years ago. The locality is on a ranch and it is necessary for a collector to ride a horse about 10 miles to get it. One of the men who worked on the ranch brought the crystals to Mr. Tittle; since the death of this man no more crystals have been brought out to Mr. Tittle's knowledge.

A recent letter from Mr. Tittle gives more information on the locality:

"It is not likely that any more of the crystals will find their way out of the canyon unless there is a change in the management of the ranch upon which the site is located. I had an old cowhand friend who formerly worked on the ranch and was a favorite hand who brought them out for me via pack horse. The ranch is owned by an English or Irish youngster, he having been one of the two heirs of the founder. Since it fell into the laps of these two boys, the other died. This fellow will not permit anyone going in at all, so it will be necessary to make a new connection among the cowhands to get the crystals out. I traded minerals for several years and among my contacts was one of the executives of the A T & T Co. I shipped him several crystals and received a letter back immediately in which he expressed his delight. He said he would have declared them to be from Aragon, Spain, had he not known where they came from. So they must be very good specimens of aragonite."

Utah—Some unusually nice grayish, flattened crystals of selenite have been

sent R & M by Oliver A. Mason, of Ogden, Utah. The locality is the north shore of Great Salt Lake, about 7 miles southwest of Old Promontory Station, site of the driving of the Golden Spike. The crystals, all loose, vary from 1 x 1 to 4 x 7 inches in size. Most of the crystals, and especially the larger ones, contain dark gray inclusions (some of the clay in which they occur).

Vermont—Titanite has been found in the famous granite quarries of Barre, Washington County, Vt. R & M would appreciate more information on the occurrence.

Virginia—Two very interesting minerals from Virginia have recently been brought to the attention of the Editor by donations from William J. Foster, of Arlington, Va. The specimens come from Lowmoor quarry cave, near Lowmoor, Alleghany County. One of the specimens is limonite var. stilpnosiderite, which occurs as lustrous black masses in earthy brown limonite. The other is gypsum which occurs as a cluster of brownish fragile selenite crystals ("cave flowers"). The fragile "cave flowers" were wrapped in soaked tissue paper and subsequently dried. To remove the wrapping they were placed in a vessel of water and the softened paper gently removed.

Washington—Nice dark gray masses of petrified wood occur in the Horse Heaven District, Yakima County, Wash. A good specimen from the locality was sent R & M by G. F. Fales, Cashmere, Wash.

West Virginia—Barite occurs in limestone concretions in shale at Morgantown, Monongalia County, also in limestone concretions in a much older shale formation at Petersburg, Grant County, both in W. Va.

Wisconsin—A locality for magnetite sand is Wisconsin Point, Douglas County, Wisc. It is about midway between Superior, Wisc., and Duluth, Minn, two cities on Lake Superior. P. J. Pieterek, of Ashland, Wisc., sends in the following note on the locality:

"Wisconsin Point is a continuation of Minnesota Point and formed when a channel was cut through so ships could go into Superior, Wisc., to unload coal and load iron ore and wheat—by the way Superior has the largest iron ore dock in the world. To get to Wisconsin Point you go from Superior and to Minnesota Point from Duluth.

"The magnetite band is a foot thick at times. We use a magnet with a handkerchief over it to pick up the magnetite, in this way you eliminate the other sands present."

Wyoming—Attractive specimens of wood opal, dark brown and milk white, have been found in Jackson Hole, Teton County, Wyo.

Alaska—Very fine crystals of red almandite garnet are found in schist at the mouth of the Stickeen River, near Fort Wrangell, Alaska. These crystals are remarkably symmetrical and a large number of them have been distributed throughout the world.

Algeria—Nice specimens of galena are found in the Mesloula lead mine, located 5 kilometers (about 3 miles) from Clairfontaine, Algeria, in barren rolling hills that border the Clairfontaine plain.

Argentina—Important discoveries of uranium sources have been made recently in the Argentian province of Catamarca on the slopes of the Andes Mountains. (*Chemical and Engineering News, Aug.* 15, 1949)

Australia—Beautiful botryoidal masses of emerald-green malachite have been found in the copper mines at Burra Burra, South Australia.

Austria—Brown, gemmy titanite crystals are found in the Hollersbachtal, Pinzgau, Salzburg, Austria.

Brazil—Deposits of manganese ore averaging about 50% pure manganese and estimated to amount to more than 7 million tons, have been reported in Serra do Navio district of Brazil, one of the least explored regions of the Amazon valley. (*Chemical and Engineering News, Aug.* 15, 1949).

British East Africa—Beryl occurs in Tanganyika in pegmatite veins at Ufipa, in the Uluguru Mountains, in the Central Province northeast of Dodoma, and at Namaputa in the Lindi district. None of the deposits contain "logs" of beryl or shows sufficient concentration and quality

to render it workable. The variety known as emerald has been recorded in anthophyllite-talc-biotite-schist from the Nguru Mountains, Morogoro district, but the crystals obtained, though of good color, were small and not of gem quality. (U. S. Bureau of Mines *Mineral Trade Notes,* October 1949, p. 4).

Canada—Two new high grade pitchblende veins have been discovered on the Black Lake property of Nisto Mines, Ltd., in Saskatchewan. The first vein consists of a cross fracture continuous for more than 100 feet.

Trenching has disclosed very high grade pitchblende averaging better than one-inch width. Geiger counter reaction indicate that similar material will be found along the total length of the vein. The pitchblende will run 35 to 45% uranium oxide. The second new discovery has been trenched for only a short distance. (*Chemical and Engineering News,* Sept. 5, 1949).

China—A number of interesting minerals were collected in China by Clarence Jenni, of Los Angeles, Calif., when he was stationed in that country a short time ago. Some of the minerals are: Quartz (moss agate) brownish chalcedony with brownish mossy inclusions—from the Great Wall of China, north of Kalgan, Chahar Province, Mongolia; Quartz (Jasp-opal): brownish, lustrous mass—same locality as moss agate; Quartz (chalcedony): 1" grayish ball from ancient lava flows northwest of Kalgan; Muscovite: small crystal plate with massive greasy smoky quartz—from pegmatite, edge of Gobi Desert, N. Shansi Province; Beryl: greenish, loose crystals, 1 1/2 x 2", same locality as muscovite; Jet: black, compact mass—Chiau Chou, N. Central Honan Province.

We hope Mr. Jenni will write for us an article on his collecting experiences in China.

Egypt—Dr. C. H. Barlow of Cairo, Egypt, gives us the following information on two gem stones of that country:

Amazonstone occurs in pegmatite dikes in the Sinai Peninsula and in the Aswan Province. These dikes are worked only for the amazonstone which takes a beautiful polish and sometimes is sold as imitation turquoise.

Rose quartz occurs as loose pebbles in the Eastern Petrified Forest, 12 miles southeast of Cairo. It makes beautiful cabochons.

Obsidian in Egypt, Dr. Barlow further informs us, is found only in small flakes.

England—Botryoidal, pale brownish masses of chalcedony which fluoresce green under the Mineralight, are found at Rottingdean, near Brighton, Sussex, England.

Finland—Nice gray crystals of scapolite are found on the island of Laurinkari, Finland.

France—Nice greenish-blue turquoise, associated with grayish-white amblygonite, is found at Montebras, Soumans, Department de la Creuse, France.

Germany—Beautiful specimens of crystallized galena have been found at Andreasberg, Harz, Germany.

Greece—Sulphur is mined on the island of Milos, Greece, and nice crystallized specimens have been found.

Greenland—Swedish, Swiss, and British scientists have joined a Danish government expedition to East Greenland where last year the Danish scientist, Lauge Koch, made discoveries of lead ore and other minerals in huge deposits around King Oscar's Fjord. It is estimated that at one site one million tons of lead could be mined, which means that this deposit is the world's largest lode of lead ore. (*Chemical and Engineering News,* Aug. 8, 1949).

Magnetite was also discovered in 1948 near the famous cryolite mine at Ivigtut, Greenland. The deposit is being investigated and if it has merit, iron mining may soon be started in Greenland.

Hawaii—Donald Sur, of Honolulu, Hawaii, sends us the following information on Hawaiian minerals:

Quartz crystals are known as "Hawaiian diamonds."

Calcite crystals are the "diamonds" that named Diamond Head, near Honolulu.

Feldspar is known as "Hawaiian topaz."

Olivine crystals are the only minerals found in Hawaii that have value as gems.

Spun glass-like threads from frothy

lava are known as "Pele's hairs."

Chalcedony is known as "Pele's tears."

P.S. Pele is a Hawaiian goddess.

Ireland — Minutely crystallized and stalactitic, pale yellowish masses of smithsonite, are found in the Sheshodonnell East Mine, Castletown, County Clare, Ireland.

Ireland, which for a number of years was known as Eire, has changed it name again. Eire became Ireland on April 18, 1949.

Mexico—A large deposit of antimony ore has been discovered in the Sierra de Coronado Mountains in San Luis Potosi State, Mexico.

Newfoundland—This large island and British Colony, lying at the mouth of the Gulf of St. Lawrence, became part of Canada on March 31, 1949.

Calcite, white, coarse crystalline, with massive pyrite, on dark gray compact limestone, occurs at the Big Falls of the Humber River, in Newfoundland. A nice specimen from the locality was sent R & M sometime ago by Dr. L. Prescott Brown, of Albany, N. Y., who had visited the island on a fishing trip.

Norway—A nice green crystal of beryl, 1" long, from Fosdak, Saetersdalen, Aust-Agder Province, Norway, was donated to R & M by John S. Albanese, of Newark, N. J.

Palestine—Hatfield Goudey of Yerington, Nev., donated to R & M a number of minerals, which come from various parts of the world. The specimens had been picked up as souvenirs by an o'd gentlemen who was traveling around the world and most of them are unusually interesting, and well labeled. Among these souvenirs were three specimens from Palestine as follows: Chalcedony, brown mass from Jericho; petrified wood, grayish gemmy mass from the shore of the Dead Sea; asphaltum, heavily impregnating limestone so that the rock looks black, from the shore of the Dead Sea.

Scotland—Rutile, as slender black radiating crystals on massive smoky quartz, is found on Ben Gloe, Perthshire, Scotland.

South Africa — Soft, fine-grained, bluish-gray pyrophyllite of uniform texture and composition has been quarried intermittently on a small scale at Gastoptefontein No. 145 farm in the Lichtenberg district, near the small village of Ottesdal, western Transvaal. Locally it has been used for building construction, paving material, and ornamental ware such as ash trays and book ends. The latter are sold under the name of wonderstone. It is a large deposit and blocks can be quarried up to 12 inches thick and several feet square. (U. S. Bureau of Mines *Mineral Trade Notes*, March 1949, p. 38).

Spain—Nice dark green terminated crystals of malachite are found in the Mina Colledo de la Plata, Campillo, Teruel, Spain.

Spitzbergen — Among the specimens donated to R & M by Hatfield Goudey, of Yerington, Nev., were two granite pebbles from the shore of Magdalena Bay, Haakon VII Land, Spitzbergen. They consist of small scales of silvery muscovite, flesh-colored orthoclase, and milky quartz. These pebbles, coming from far-off Spitzbergen Islands, represent the most northerly locality in the world, in our collection.

Sweden — Nice greenish cleavable masses of spodumene come from Uto Island, Sodermanland, Sweden.

Switzerland—A nice specimen of small golden-yellow crystals of fluorite in a vein of oolitic limestone, was recently sent R & M by Dr. P. Staehelin, of Basel, Switzerland. The specimen comes from a quarry near Liestal, Canton Baselland, Switzerland. The fluorite fluoresces pale green under the Argon bulb and the Mineralight.

Uganda—A loose black augite crystal and a loose dark green diopside crystal, both pyroxenes and both coming from Mt. Elgon, on the Kenya-Uganda frontier, East Africa, were recently donated to R & M by John S. Albanese, of Newark, N. J.

Wales—Large, bluish-gray crystals of fluorite associated with chalcopyrite crystals, come from the Halkyn mine, Holywell, Flintshire, Wales.

SOME SUGGESTIONS CONCERNING THE PROTECTION OF FRAGILE MINERAL SPECIMENS

By WILLIAM J. FOSTER
3100 Lee Blvd., Arlington, Va.

The fragility and susceptibility to damage of certain types of mineral specimens is a fact known most woefully and too well to every rockhound. Who is there among us who has not at one time or another experienced that peculiarly poignant thrill of discovering a rare and delicate cluster of selenite, calcite, or similar crystals, only to have the heartbreaking disappointment of later unpacking it at home as a shattered mass of useless fragments? Which of us has not felt the urge to give way to violent words of unseemly import at watching his choicest specimens rudely mishandled and perhaps dropped damagingly from the fingers of the uninitiate Or who again has not seen them battered and marred as a result of being loosely rolled about in a sticking and refractory cabinet drawer? Such bitter experiences as these are well known to the writer, and having given some little study and thought to the problem of their prevention, or at least to their minimization to the greatest possible degree, the following expedients have been tried and have been found to be of considerable use and efficacy.

As regards the packing of fragile specimen, either for personal carrying or for shipment, it has been found that ordinary toilet tissue of the roll type offers an excellent medium. Although it is obvious that this material is capable of use as packing exactly as it comes from the roll, the maximum degree of protection is obtained by first well moistening the tissue with water. It is then wrapped about the specimen a number of times, meanwhile being pressed gently into close contact with the surfaces thereof and well down into any cavities of interstices between crystals, any excess of water being squeezed out in the process. Wrapping in this fashion is continued until a substantial ball of the damp paper is built up, completely surrounding and embedding the specimen.

Although the mass of damp paper thus formed will be found to afford considerable protection just so, it is highly desirable, and especially if the specimen is to be transported a considerable distance or is to be shipped by parcel post or express, to thoroughly dry out the paper coating if time and opportunity permits. A tough, resilient shell in intimate contact with the delicate processes will be the result, and the whole may then be further packed or prepared for transportation or shipment in any desired manner.

To remove the protective coating, the entire mass need only be soaked in water until the paper softens, whereupon it will separate cleanly and easily from the specimen, and may be gently pulled away without difficulty.

While it is obvious that types of paper other than the toilet tissue may be used in a similar manner, as for example paper napkins, facial tissues, or even in a pinch strips of newspaper, besides being of just the correct consistency for the purpose, the toilet tissue offers certain other special advantages of its own. It is available in a long, continuous strip of any desired length, which greatly facilitates the wrapping operation, and it is readily obtainable practically anywhere. The rolls are very conveniently carried in the collecting kit, and it need hardly be mentioned that to the rockhound who indulges in extended collecting expeditions to areas remote from the comforts of civilization, certain uses for the tissue other than that of packing specimens will doubtless suggest themselves!

It is to Mr. James H. Benn of the U. S. National Museum at Washington, D. C., that the present writer is indebted for the foregoing suggestion.

The permanent disposition of fragile specimens for display or study purposes also poses the problem of adequate protection from damage. Even though such a specimen may be placed in an individual tray in a cabinet drawer for example, as

is commonly the practice, there is still considerable possibility of such damage if the specimen is permitted any independent movement whatsoever. A rigid, permanent mounting for each specimen of this type is therefore a thing highly to be desired. In addition to preventing movement of the specimen within the drawer, such an arrangement will have the further advantage that when the specimen is removed from the drawer for any purpose, it will be the mount which is handled rather than the specimen itself.

As regards the mount proper, there are of course a number of types which will suggest themselves, and personal preference will largely govern what form is selected. The provision of an individual container for each specimen or group of related specimens, as for example the conventional cardboard specimen tray, will still be found to be advantageous even when the specimen is rigidly fixed to a mount, and the use of an enclosing means of this nature is highly recommended. While the specimen may be mounted within such a tray by simply affixing it directly to the bottom thereof, a much better plan is to mount it upon a separate rectangle of thin wood or cardboard which is cut to the proper size to fit closely within the tray, and which may be removed therefrom at will.

The writer has found that a rather heavy, stiff cardboard having a white surface on one side, and which is commercially available under the name of "photo mounting board" is entirely suitable for this purpose. In preparing a mount from this material, a strip of the board is cut to the inside width of the tray to be used, and of a length somewhat greater than that of the tray. Using a metal-edged ruler and a razor blade, the strip is scored partially through the board and crosswise of the strip on two parallel lines which are spaced apart a distance equal to the inside length of the tray *minus* double the thickness of the cardboard. The scoring is done on the white face of the board; that is, the face to which the specimen is to be mounted. The ends of the strip beyond the scored lines are then trimmed to equal length as desired, and are bent downwardly to form a short leg portion at each end of the strip. The mount thus formed is inserted into the tray with the leg portions downwardly, so that by contact with the bottom of the tray they serve to support the center portion of the strip, which forms the actual mounting surface, a short distance above the bottom. Reference to the illustrations will make this matter clear.

It will be found that the leg portion of a mount constructed in this manner will have a tendency to spring outwardly, and by pressing against the ends of the tray will serve to firmly yet removably hold the mount in position. In effecting such removal of the mount from the tray, a stiff piece of thin wire having a short right-angled bend at one end, which may be slipped down between an edge of the mount and the side of the tray and hooked beneath the mount body, will be found very convenient. The length of the leg portions of the mount will of course be determined by the relative depths of the specimen and of the tray selected, however in any case their use is strongly recommended, for not only do they permit the ready removal of the mount from the tray in the manner above described, but they also provide in effect, a shock absorbing arrangement for additional protection of the specimen.

For securing the specimen to the mount, the ordinary plastic household cement which is sold in collapsible tubes (e.g. "Duco Cement") has been found entirely satisfactory. This cement is both tenacious and flexible, and will readily adhere to almost any type of surface; furthermore, being entirely clear and transparent, it has a minimum of conspicuousness, even when used in connection with specimens of a glass-clear nature. Also, if it is at any time desired to remove a specimen from its mount, this may readily be accomplished without damage by simply soaking both the specimen and mount in a saucer of acetone or other suitable solvent until the cement is completely dissolved.

For the mounting of very small specimens or those having a smooth, plane under surface, the cement alone will gen-

erally suffice, such mounting being best effected by applying a small quantity of the cement both to the mount and to the specimen. The coatings are then permitted to dry for a few minutes until they have become rather viscid and sticky, whereupon they are pressed firmly into contact with each other and allowed to dry completely. For the larger and heavier specimens, however, and those having irregular under-surfaces, it is necessary to provide some material in addition to the cement to act as a space filler, so that a surface to surface contact over a considerable area is obtained. For this purpose, a plastic composition consisting of finely divided wood flour in a plastic cement, which is sold in cans as a crack filler, etc. (e.g. "Plastic Wood") is entirely suitable. Although this material as sold generally lacks sufficient adhesiveness for the present purpose, an additional quantity of the household cement mentioned above may be added to it, so that a mass of the proper consistency may readily be obtained. The cement and the composition are entirely compatible and may be safely mixed in any proportion which may be desired.

The mixture thus obtained may be

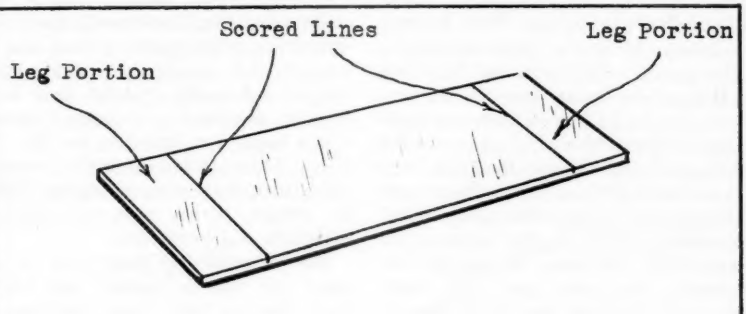


Fig. 1 Cardboard Strip Scored To Form Mount

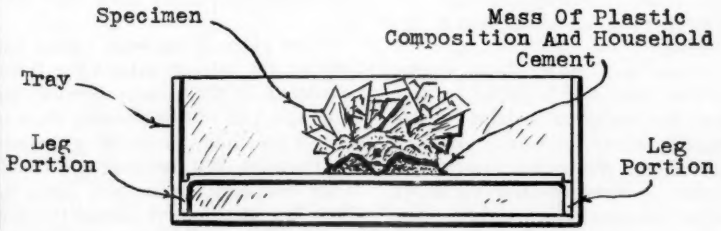


Fig. 2 Cross Section Through Tray And Mount With Specimen Attached

used in exactly the same manner as the cement alone, and is also capable of being similarly removed. Of course in using either of these materials in the manner suggested, care should be taken not to use so much that the result will be unsightly, though at the same time enough should be applied so that a good firm support over a substantial area is provided. A little experimentation in this respect will quickly indicate the requisite quantity, and in any event no harm will be done to the specimen should the first attempts be unsatisfactory, for in such a case all cement may easily be removed therefrom in the manner above described and the mounting done all over again.

SOME MINES OF OXFORD COUNTY, MAINE

By NEIL JORGENSEN
247 W. Summit Ave., Haddonfield, N. J.

In the pegmatite region of Oxford County, Maine, near the villages of Buckfield and Paris, are the Mt. Mica, Bennett and Bessey Mines, as well as several smaller quarries. Of these, the Mt. Mica and Bennett Mines are the best known. A few gems and a host of minerals occur in these mines. Mt. Mica, the world's most famous tourmaline mine, is 1½ miles northeast of Paris. It was discovered by two boys in 1820, when they found a tourmaline crystal in the roots of an uprooted tree. The mine was worked intermittently for gems and mica until about 1920. The pit runs in a general north-south direction. It is now 300 feet long and approximately 35 feet deep. Originally, however, the pit was larger, but has been filled in with the dumping of quarry waste in the abandoned parts. Probably the mine will be reopened sometime in the future, since the gem-bearing layer has not been exhausted. It will, however, require digging through the thirty-foot overlay of schist which lies above the layer.

The writer has made about twenty trips to this mine over a period of five years and has collected a large variety of minerals. Most noteworthy are the dark green gem tourmaline and pink, white, blue, watermelon and cucumber tourmaline of specimen quality. The watermelon tourmaline is green with a pink center, and the cucumber is green with a white center. In addition, albite, cleavelandite, orthoclase, muscovite, biotite, lepidolite, cookeite, triphylite, zircon, amblygonite, graphic granite, kaolin and manganapatite, as well as caesium and aquamarine beryl, montmorillonite, francolite, purpurite, (heterosite), spodumene, cymatolite, arsenopyrite, garnets and four varieties of quartz — clear, milky, morian and smoky crystals—were found. Bastin* lists twelve additional minerals which have been found in the Mt. Mica Mine. These include autunite, brookite, childrenite, damourite, halloysite, lollingite, petalite, pyrite, cassiterite, sphalerite, yttrocerite and pyrrhotite.

Northeast of the main gem pit is a newer pit that is worked for feldspar from time to time. Here was found a pocket thirty feet long which contained cleavelandite crystals of exceptional size and quality, as well as crystals of smoky quartz, white and blue beryl, columbite, kaolin and muscovite. Across the road is another small pit which was worked this spring for feldspar. Specimens of rose, smoky and clear quartz, biotite, muscovite, and black tourmaline have been found here.

A few miles up the road toward Buckfield on the hillside behind the Bennett homestead, is the famous Bennett mine. Although it is idle at present, there is a definite possibility of its being reopened. The main pit, 200 feet long and from 10 to 50 feet deep, is partially filled with water. On its extensive dumps the writer has found many excellent specimens of albite, cleavelandite, manganapatite, blue apatite, orthoclase and cookeite, as well as

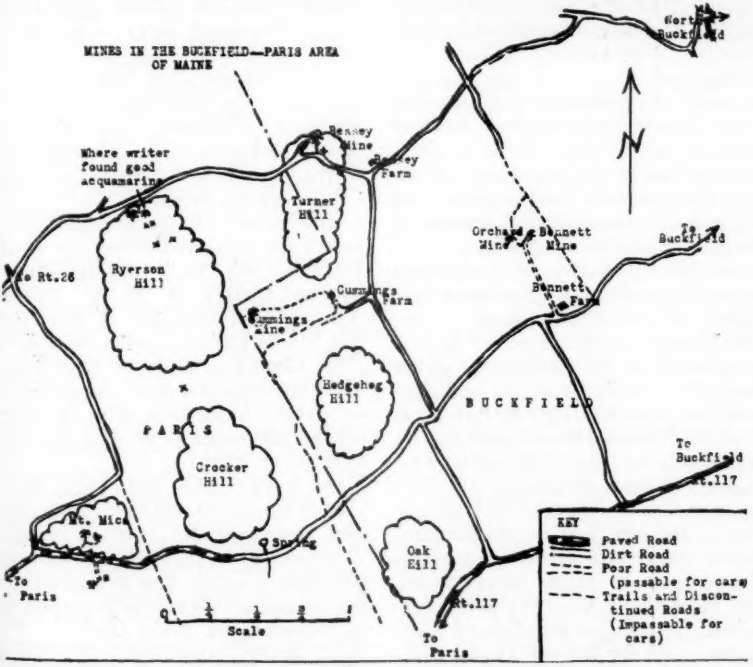
*Bastin, E. S. — U.S.G.S. Bull. 445, Geology of the pegmatites and associated Rocks of Maine. Pages 88-89.

crystallized and massive smoky, colorless and milky quartz, muscovite crystals, biotite, garnet, cassiterite, columbite crystals, arsenopyrite, montmorillonite, lepidolite and a few dark green tourmaline crystals.

The only quarry in the vicinity which has been worked steadily in recent years and is now in operation, is the Bessey quarry. This mine, which is worked for feldspar by the United Feldspar and Minerals Company of West Paris, is 80 feet deep and 250 feet long. Until a year or so ago, this was a typical potash-spar quarry. On its small dumps were found specimens of massive smoky quartz, feldspar, black tourmaline and mica. But recently a soda content has entered the spar and with it several interesting minerals which were found in July, 1949, when the writer, accompanied by James Holmes of Buckfield, made a visit to this quarry and opened two small pockets of gem smoky quartz crystals. Some have phantoms and liquid inclusions; two have movable bubbles large enough to be seen clearly with the naked eye. Several interesting micro-cavities of pyrite, specimens of arsenopyrite and a single specimen of sphalerite were also found that day.

In addition to the Mt. Mica, Bennett and Bessey mines, there are several smaller quarries which are equally interesting. One of these is the Cummings mine, owned by Horace Cummings. Some time ago it was worked for quartz by the United Feldspar Company. Much of the quartz shows one or two crystal faces, and many complete crystals may be found lying loose or attached to the quartz matrix.

On Ryerson Hill, about a mile from the Bessey quarry, there are a number of openings. None are very large, but some have yielded fine crystals of aquamarine beryl. At one of these (see map) the writer found some pieces of a large beryl crystal that had several clear spots in it; also specimens of arsenopyrite, triphylite, cleavelandite, black tourmaline, muscovite, orthoclase, cookeite and columbite.



Mines in the Buckfield-Paris area of Maine.

NEWARK MINERALOGICAL SOCIETY

(Third oldest Mineral Society in the U.S.A.)

By LOUIS REAMER

A society for mineral collectors was organized in Newark, N. J., on November 7, 1915, through the efforts of John Holzman, M. H. Lehman, and William H. Broadwell. The first meeting of the Society, which consisted of 14 charter members, was held at the Newark Technical School where a room had been given them as a permanent meeting place by Prof. Charles Adams Colton.

Prof. Colton was elected President; John Holzman, Vice-President; M. H. Lehman, Treasurer; and William H. Broadwell, Secretary, of the new Society. Mr. Broadwell served 13 years as Secretary.

The charter members of the Society were:

*William H. Broadwell, John Holzman, *M. H. Lehman, *J. A. Manley, *C. C. Beegle, *J. Hawkins, *Miss A. Luther, *A. H. Petereite, Louis Reamer, *Prof. C. A. Colton, *N. J. Ihnen, *Capt. Miller, *A. Schelckser, *P. Quinn.

* Deceased.

A committee on by-laws was appointed to formulate a simple set of rules to govern the Society, which had as its object the improvement and sociability of collectors living in New Jersey although not adverse to accepting collectors residing in other parts of the United States.

Many interesting talks and lectures had been promised the Society for the winter including one stereopticon lecture.

On January 2, 1916, a set of by-laws was presented to the Society for action and adopted, article by article, and then as a whole. The Certificate of Incorporation of the Newark Mineralogical Society was received from the Clerk's Office of the County of Essex on October 10, 1925. The Society's membership in 1925 was 80.

During the first year of the Society's existance, the average attendance at meetings was from 16 to 20 members and guests. Later as the Society's meeting notices were inserted in the *Newark Evening News* and the *Newark Sunday Call*, describing programs and mentioning titles and guest speakers, many out of town collectors were among those present.

Amateur mineral collectors would bring unknown specimens to meetings for identification. One young boy brought a specimen, wrapped in cotton and tissue paper and labelled "Milk-Stone." The specimen was identified as white marble from Vermont. Another brought a specimen whose father had named it "Pepper Rock." Identification showed it to be Barre granite.

Prof. Charles Adams Colton, Founder, Principal, and Guiding Spirit for years of the Newark Technical School, and President of the Newark Mineralogical Society, retired from duty in 1920. He was 73 years old when he died on New Year's Day, 1926, at the Memorial Hospital, Morristown, N. J.

On Sunday, March 1st, 1925, the Society presented its first guest speaker, M. W. Twitchell, Ph.D., Assistant State Geologist, who gave a lecture titled: "The Mineral Resources of New Jersey." At this lecture the attendance was large, the discourse instructive and educational, school teachers with pupils attended, and at the close many questions were asked for the speaker to answer.

The Newark Mineralogical Society celebrated its 10th Anniversary on Sunday, December 6th, 1925, and again had as its guest speaker, Dr. M. W. Twitchell, Assistant State Geologist of New Jersey. The title of Dr. Twitchell's discourse was "The Geological Story of New Jersey." The attendance was large and all enjoyed the lecture. At the close of the lecture the meeting adjourned to an informal dinner at Hotel St. Francis.

On Sunday, May 2nd, 1926, Prof J. Volney Lewis, of Rutgers University of New Brunswick, N. J., gave a lecture on "The Geology of the Zeolites," illustrated with lantern slides. This lecture was considered one of the best and a repeat talk was requested for a later date.

On Sunday, April 3rd, 1927, Dr. M. W. Twitchell delivered his last and final

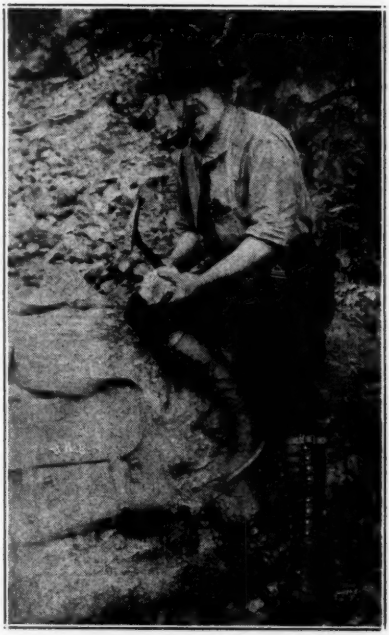
lecture not only to the members of the Newark Mineralogical Society but to the world as well. This lecture on "The World's Greatest Underground Treasures" was given in the Lecture Hall, 3rd floor, of the Newark Technical School, 367 High Street. A large audience gathered and heard the noted speaker deliver one of the most interesting talks ever heard. At the close of the lecture a rising vote of thanks was tendered to the speaker.

The meeting then adjourned to Hotel St. Francis where a dinner had been arranged in honor of Dr. Twitchell. The members and guests were standing around the long dining table waiting for the arrival of Dr. Twitchell but instead sad news had to be announced to them—Dr. Twitchell's death. On the way to the hotel in company with Mr. J. W. Radu, Dr. Twitchell was stricken with a heart attack, while walking across Military Park opposite the Hotel; he was placed in a taxi and rushed to the City Hospital where he soon died.

The sad announcement was a terrible shock to the members who had planned to present a large bouquet of flowers to Dr. Twitchell when he was to be escorted to his chair. The dinner was served, not with joy or laughter as was the usual custom, but with sadness. After the dinner, the members and friends left sorrowfully for their homes.

On December 1st, 1929, Herbert L. Thowless became the Secretary of the Newark Mineralogical Society (succeeding Rodney Miller); he held this office for 10 years. Mr. Thowless was a retired lawyer and for many years was a member of the Common Council and Board of Education. He was also for many years active in civic affairs and served as trustee and treasurer of the public welfare committee of Essex County, New Jersey. Mr. Thowless died May 18, 1940.

The programs for the meetings held by the Society were strickly mineralogical, minerals of various species and associations would be discussed while members advanced in mineralogy would volunteer or be selected to give talks on special minerals.



A familiar pose of Wm. H. Broadwell, one of the founders of the Newark Society. Mr. Broadwell died April 2, 1947.

The membership increasing and place of meeting small, the matter of larger quarters was discussed. Mr. Broadwell stated that a large room could be had at the Turn Verein Building. A committee was appointed to take charge, and on May 6, 1934, a favorable report was presented by the chairman, the members voted unanimously to accept the offer transmitted, therefore it was arranged to hold the first fall meeting October 7, 1934, in the Turn Verein Building.

On December 1st, 1935, the 156th regular meeting of the Newark Mineralogical Society was held in room 7, Newark Turn Verein Building, 182 William St., Newark, N. J.

In honor of the 20th Anniversary, the program for the afternoon consisted of talks by William H. Broadwell, "The Club Twenty Years Ago," John A. Grenzig, "The Club Ten Years Ago," John

Reiner, "The Club Today." At the close of the meeting, the members went to the Hotel Douglass, where the 20th Anniversary Dinner was held.

The Society held its meetings in Turn Verein Building, room 7, for four years, when some members began complaining that the building was inconvenient to reach and suggested other quarters more convenient. Mr. Broadwell suggested that a large room could be rented at Junior Hall, 468 Orange St., Newark, N. J. A committee was appointed by the President to investigate the matter. At the meeting held on October 2, 1938, the committee reported that a room could be had, the Brewster Room, 2nd floor, Junior Hall. The report was accepted and the members voted unanimously to take the room.

The Society held its meetings in the Brewster Room for six years, when a room in the Newark Museum was offered the Society by Miss Beatrice Winser, Secretary and Director of the Newark Museum Association. The Society accepted the offer and on October 1st, 1944, held its first meeting in the Museum. Since meeting in the Museum, the Society's membership roll has increased to 100 members.

The Newark Mineralogical Society has enjoyed 30 field trips since it has been organized. During the 35 years of the organization, its members have always been on the alert to go rock hunting regardless of weather conditions.

Editor's Note: The oldest mineral club in the country, the New York Mineralogical Club, was founded on Sept. 21, 1886; the second oldest is the Philadelphia Mineralogical Society, founded on Oct. 1, 1892.

. *List of guest speakers who have entertained the Newark Mineralogical Society*:

Dr. Alfred C. Hawkins, of Rutgers University, New Brunswick, N. J. Title: "New Jersey Minerals."

Mr. James F. Morton, Curator of the Paterson Museum, Paterson, N. J. Title: "Paterson and Nova Scotia Minerals."

Mr. O. Ivan Lee, B. Sc. Topic: Zircon: its varieties and alterations."

Mr. Morrell G. Biernbaum of Philadelphia. Topic: "Zeolites of Nova Scotia."

Mr. Herbert P. Whitlock, Curator of American Museum of Natural History. Topic: "Calcite."

Mr. J. Claudius Boyle, Department of Mineralogy, Children's Museum, Brooklyn, N. Y. Topic: "Interesting Localities of Eastern Ontario and Northern New York," illustrated with Lantern Slides.

Mr. Joseph F. Burke, Staten Island, N. Y. Topic: "Minerals of Staten Island."

Mr. George E. Ashby, of N. Y. Mineralogical Club. Topic: "The Occurrence of Pyrite and its Decomposition."

Newark Mineralogical Society — field trip to the limestone quarry at McAfee, N. J. (Arrow points to Louis Reamer, writer of this article and the efficient and popular secretary of the Society.)

Mr. L. H. Bauer, New Jersey Zinc Company. Topic: "Minerals of Franklin, N. J."

Dr. L. C. Wills of Philadelphia, Penn. Topic: "Preparation of Micro Mounts."

Mr. Frederick I. Allen, Pres. N. Y. Mineralogical Club. Topic: "Crystallography."

Dr. Paul E. Kerr, Department of Mineralogy, Columbia University, New York City. Topic: "Mineralogical Excursions in California and Nevada."

Mr. Charles R. Toothaker, Curator, Museum of Commerce, Phila, Penn. Topic: "Collecting Minerals from Brazil."

Mr. Jerome B. Wiss, Certified Gemologist. Topic: "Discourse on Gems."

Horace E. Wood 2nd., Professor of Biology, University of Newark, N. J. Topic: "Talk on Fossils."

Mr. J. W. Radu. Topic: "Talk on precious and semi-precious stones."

Roy M. Allen, Sc. D. Topic: "Getting acquainted with the feldspars."

Mr. Jay T. Fox, P. S. A. Director-Curator, Fox Museum of Natural History. Seaford, L. I., N. Y. Topic: "Mineralogical Photomacrography and Photomicrography with Kodachrome Film."

Mr. Horace G. Richards, Scientist and Associate Curator of the Department of Geology and Paleontology, Philadelphia Academy of Science, Philadelphia, Pa. Topic: "The Mexican Volcano."

Mr. John H. Bertrand, Jr., Easton, Penn. Topic: "Minerals of the Fork of the Delaware and Vicinity."

Mr. Curt George Segeler. Topic: "The Elements of Crystallography."

Mr. Cornelius Verburg, Westfield, N. J. Topic: "Talk on Lapidary for the Amateur."

Mr. Henry E. Millson, of The Calco Chemical Corporation. Topic: "Fluorescent Minerals," illustrated with double projection on Kodachrome Slides.

Dr. J. F. Schairer of the Mineralogical Department of Yale University. Topic: "Minerals of the Pegmatites and their Origin."

Dr. A. M. Weckstein. Topic: "Radioactivity."

Mr. Paul Seel. Topic: "Down the Colorado River."

Dr. A. C. Walker and Mr. Ernest Beuhler, of the Bell Telephone Laboratories. Topic: "Colored sound movies on the growing of piezo-electric crystals."

TEXAS MINERAL SHOW
April 21-23, 1950

The Annual Meeting and Mineralogical Show of the State Mineral Society of Texas will be held in Austin, Texas, April 21, 22, and 23, 1950. Arrangements have been made for all exhibits to be set up on the 20th. In other words, the Mineralogical Show in Texas will be a full three day affair and will be held in the large City Coliseum which has ample space for accommodating as many people as want to show. There is ample space for everyone to drive their cars into the Coliseum right up to the place where they are to unload their equipment, minerals, or supplies. Every accommodation in the world can be found at the Coliseum. The expense will be held to a maximum of $5. for each table. It is to be hoped that the rock show in Austin will be a vitamin pill to all the dealers throughout the United States. It is to be hoped, also, that the societies and rock hounds to the East, North, and West of Texas will all arrive in Austin for this rock show April 21, 22, and 23. This is the time of the year when the Bluebonnets and Indian Paint Brushes are in all their glory.

The Coliseum is costing the State Mineral Society of Texas quite a handsome figure for each day of the show; however, the State Mineral Society of Texas has made arrangements for paying for the use of this large attractive well-lighted building where no one will be crowded for space, and where everyone can sit down at any time that he is tired. Rest rooms, parking facilities, and storage facilities are ample.

A strong appeal will be made for the Editors of the leading mineral publications to attend the rock show in Austin. The President of the Society, J. J. Brown, whose address is 302 Walton Building, Austin, Texas, has been working steadily for some time attempting to get a large exhibit from Georg Wild out of Idar-Oberstein, Germany.

Arrangements have been made so that any exhibitor wanting to demonstrate his machinery will have plenty of space, and need not be worried about scarring the sides of the building or getting oil on the floor, since part of the building has a well-packed dirt floor.

THE MICRO-MOUNTER

Conducted by LEO N. YEDLIN, 557 W. Penn St., Long Beach, N. Y.

We must continue with the comments of our correspondents.

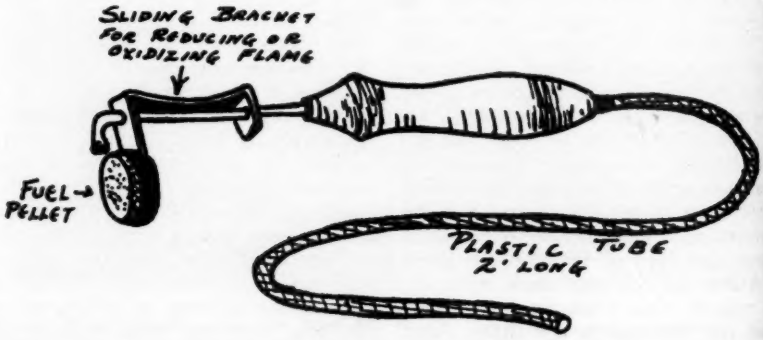
William C. Oke, of Los Angeles, Calif., has given us several good ideas, and we pass them on to you. Quoting from his letter of February 12th:

"I, as well as several of my m/m friends, had trouble in storing the boxes until we found a black plastic cabinet used by dentists to keep their sample teeth in. This cabinet is sectional so one can start out with one or two drawers, together with top and bottom, and add more drawers as the need arises. These cabinets are made by The Dental Supply of New York, and can be obtained at any dental supply house. The cost is very reasonable. It is a good looking cabinet and the size is 14" wide, 11½" deep, and, with top, base and 8 sections is 11" high. Each drawer will hold 168 of the plastic boxes, slightly fewer cardboard ones since the lids take up more room. Drawers come with or without partitions, and the latter should be used as there is more room.

"I am taking the liberty of sending you under separate cover three finished m/ms to show my methods of mounting and labelling. The white dot inside the box should be facing you as you place it on the stage, this being the best orientation for viewing it.

"The red dots on the top label indicate the magnification to use. No one magnification suits all m/ms, some need higher or lower, so anyone viewing my mounts know just which to use without trying different ones to see which is best. In my case I am using a Spencer 25LF which has 9X, 18X and 27X on revolving nosepiece, and corresponds to one, two or three red dots on the label."

Hamonneau of New York City is marketing a new blowpipe set. It's called "super jet blowtorch," and is a compact little instrument, which can be used for jewelry making as well as for mineral tests. It can be taken right into the field, for the fuel is a little round pellet inserted in a cup directly in front of the airstream. This fuel burns hot and clean, and lasts for about nine minutes. The torch has a 2 foot long plastic tube connected so that there is ample room for manipulation when the end of the tube is inserted in the mouth. The torch sells for a dollar, and a box of a dozen fuel pellets costs a quarter. Simple slide adjustment provides for either reducing or oxidizing flame. A very handy gadget.



Super jet blowtorch.

We've just received from Miss Naomi A. Long, 444 Hyde St., San Francisco 9, California, a group of several dozen specimens for micro-mounts. These were beautiful black melanite garnets, apple-green andradites, magnetite and apatite. All have been distributed to m/m collectors locally. Miss Long writes: "There is more of this material to be given away. I would be pleased to send additional specimens." May we suggest this: If you are interested in obtaining this material you might write to Miss Long. But be certain to send along a small box, properly addressed to yourself, and bearing sufficient postage to cover shipping costs from California to your home. The box should contain tissue and gummed paper for sealing. We're quite certain that Miss Long, an ardent collector, would be glad to supply specimens.

Paul Desautels has written to us again, and has a lot to say. We think his comments are worthwhile, and we include them herewith, as written. And we fully endorse what he says. None of the stuff about the "opinions being that of the writer and do not necessarily reflect the views of . . . etc., etc." Here they are:

"Dear Lee:

"It has been quite an interval since my last letter but I haven't been mineralogically dead. Any time I have had for minerals has been spent in mounting some new material that just couldn't wait for anything.

"Lou Perloff's remarks in R & M were most interesting and my pleasant reaction was that here at last was a kindred soul who has had the same set of experiences as I have had. My only regret is that I never feel as if I am getting very far out of the "fumbling amateur class." My techniques are constantly improving and as I look back on mounts made a couple years ago which seemed good at the time I find that compared to mounts I am making now they are amateurish. Just when do we graduate into the happy state of perfection?

"The skills that one picks up while advancing from this eager beginner stage are not necessarily all skills of manipulation. Boiled down to its essentials the equipment necessary to a micromounter consists of a good binocular microscope and a brilliant light source. The other tools, as Lou states, can be almost any sort of nondescript collection of bits of wire, pins, knives, pieces of cork, needles, glue, paper, etc., all of which can be gathered as the need for each becomes obvious. Using these tools properly for prying, brushing, breaking, picking, cleaning etc., is a matter of developing the delicate touch and control of finger motions. It is true that most of these skills can be developed only through constant practice. It seems to me, however, that there are even more important skills and attitudes to be developed in order to be a successful micromounter.

"Perhaps the most important and difficult skill to master is the ability to distinguish between a good and a poor specimen. At times this is difficult because the specimen may be the first of its type we have seen and, having no comparisons to make, we are tempted to give it the benefit of the doubt. I believe that such specimen should be ruthlessly eliminated as soon as it becomes apparent that it is not of the best quality. Usually a good micromounter can tell at a glance whether the specimen is damaged, dirty, poorly grouped, poorly crystallized or massive when it should be crystallized. In my mind, mastery of this skill of determining good and bad in specimens is really what marks the transition from amateur to advanced collector.

"Now that I have transferred almost two thousand mounds to the new plastic boxes I can see better the results of my patient labors. If you ever meet anyone who wants to see what uniformity and especially uniformity in the new plastic boxes can do for a collection then send him to me. As most "plastic box collectors" are probably doing, I am using a box top label which covers half the lid allowing a glimpse of the contents through the other half. It makes a rather attractive looking box. The labels I use are nothing more than insect labels which any science supply house handles. For identification and

cataloging purposes I put my own label with initials and specimen number on the bottom of the box.

"As for material to put in the boxes I find that in general I am plagued with too much rather than too little. Every time I visit a mineral dealer or read his ad in R & M I see some few specimens which appear most promising and since I have no objection to duplications in my collection there is hardly ever a time that I can't get something. As a result there is stored away here and there at my home in Philadelphia and at my school in Maryland a considerable backlog of material to work on. There is never an evening when I have nothing to do.

"Like Lou Perloff, every time I get a specimen from one of the special localities it undergoes a detailed scrutiny. To add to those localities which he gave as being most productive I would like to mention Laurium, Greece, with its beautiful suites of Copper, Zinc and Lead minerals; Monte Somma and elsewhere at Vesuvius for their myriads of perfect silicate specimens and where even Amphibole crystals are sharp and transparent; Bisbee, Arizona, where every cavity produces at least one beautiful cluster of Azurite or Malachite crystals, Chihuahua, Mexico, with its many unusual crystallizations of Wulfenite, Descloizite, Vanadinite, Mimetite, etc. There are many others but these I list among the most productive for my own collection.

"Of course, specimens from these localities are not available to most micro collectors unless they have recourse to dealers. I don't think you have stressed enough in your column the part dealers play in furnishing the really fine specimens from both domestic and foreign localities. Of course, they don't ordinarily sell their specimens as micro material but I personally have no hesitation about breaking up a poor or average hand specimen to get a half dozen excellent micro mounts. The fact that dealers don't normally handle micro specimens is not surprising. Why, it has taken Ward's, with its enormous mail order business, over a year to dispose of some micro-Austinite specimens which make beautiful and rare mounts. If I am not mistaken, there are still some left and every time I visit I pick out a couple more. There just isn't the demand there should be. Why do micromounters pass up such opportunities? Is it just an adversion toward spending a little money or an allergy toward dealers in general? Perhaps it's just so easy to get good material elsewhere at no cost that we tend to pass by excellent material in a dealer's stock. At any rate, dealers can't supply something for which there is no demand so that we can't blame them if we must buy and break up hand specimens.

"From a dealer some Aurichalcite specimens from Kelly, New Mexico, have recently come into hand. I believe they have offered the best lesson I have had in months on mineral genesis and mineral associations. It is true that the majority of the crystal groups are Aurichalcite but that Aurichalcite occurs in every possible habit and color (from blue to green to white) and variation in composition that it is possible to have and still bear the same name. The Aurichalcite, a basic Zinc and Copper carbonate, occurs in a silica gangue and it is not at all surprising that an excess of Zinc has led to the formation of delicate little white rosettes of Hemimorphite. Along with all this are small fuzzy spherical aggregates of a mineral tentatively identified as Rosasite, another Zinc and Copper carbonate. It's quite a sight to see the tiny fibres of Aurichalcite twisting about the rosettes of Hemimorphite and the accentuation of a blue sphere of Rosasite here and there. Or perhaps the Aurichalcite may be in radiating groups of spatula shaped crystals with a few Hemimorphite crystals clinging to individual Aurichalcite crystals. The variation is considerable. Incidentally, just as the Hemimorphites from Clayton, Idaho, which you mentioned some time ago, these specimens are from the abandoned mines at Kelly, New Mexico, and are all secondary crystallizations made since that time.

"Dealer sources, however important, are not essential if one has the opportunity to move about a bit. For example, my

third visit this fall to Frostburg, Maryland, last week again produced excellent results. With a little diligent searching and a lot of muscle, to swing a sledge hammer, excellent Barite crystals are available in large quantity. The locality, an old abandoned fire clay mine, is about as miserable appearing as possible and looks totally barren as far as crystallized material goes. Scattered about, however, are great numbers of dull brown siderite nodules, which have been set aside during clay mining operations. By direct and forceful application of the sledge hammer these tough nodules may be split and many of them are honeycombed with cavities filled with sharp, brilliant Barite crystals showing every possible combination of the various orthorhombic forms. They are absolutely clear and colorless but are grouped attractively and are a delight to the crystallographer. To enhance their beauty they normally arrange themselves over a background of dark brown siderite crystals. My only problem with these specimens is that I have so many that they just sit around and get dusty.

"While working over this Barite a couple days ago I added a new tool to my collection of weird instruments. The universally used straight pin proved a little too weak and short handled to probe into the tough siderite matrix so I pressed into service an old biology dissecting needle sharpened to a fine point. The needles cost practically nothing and come fitted with a thin, tough, long, wooden handle allowing for easy manipulation. I have found too at the same time that certain types of black liquid shoe polish make a good substitute for blackening cork mounts when the India ink supply runs out unexpectedly.

"The simplicity of the tools required and the abundance of good specimen material certainly make me wonder why our branch of the hobby has been dormant for so many years. From the looks of things, however, we are due for a rebirth. Have you pursued the idea of the mineral exchange toward any practical end? How about at least publishing a list of active micro collectors classified either as to state of achievement or geographical location or even alphabetically for that matter."

P. E. Desautels

Book Notes from John Wiley & Sons

John Wiley and Sons, 440 Fourth Avenue, New York 16, New York, has announced the publication in January of Monograph No. 2 in the Harvard Monographs in Applied Science, a new series of high-level books reporting the results of university research published jointly by the Harvard University Press and Wiley.

Entitled "Earth Waves," this second monograph is the work of L. Don Leet, professor of geology at Harvard and seismologist in charge of the Harvard Seismograph Station. A compact summary of present knowledge of waves of the earth, the monograph discusses their application and use in prospecting for minerals, studying hurricanes, measuring vibrations from dynamite blasts to determine their effects on buildings, and mapping broad earth structures of geologic interest. Results of recent research on types of wave motion, interpretations of refraction profiles, and microseisms are also presented.

Dr. Leet has applied seismic methods to prospecting for oil and bauxite, foundation engineering, and general geologic structure. The discoverer of two new wave types, he has also studied earth motion in connection with the 1945 atom bomb test in New Mexico. In addition, Dr. Leet is known for his many writings in the field and for developing the Leet 3-component portable seismograph.

Monograph No. 1 in the series, "Matrix Analysis of Electric Networks," by Philippe Le Corbeiller, was also published in January. Both are priced at $3.00. Future monographs, including one entitled "Meteors and the Upper Atmosphere," by Fred L. Whipple, Luigi Jacchia, and Zdenek Kopal, will be published at regular intervals.

"WATCHDOGS" AT THE BOUND BROOK TRAPROCK QUARRY

A few weeks ago I obtained permission to enter the North Jersey Traprock Quarry, Bound Brook, N. J., in search of Calcite, Prehnite, Copper and other traprock minerals. Before making this trip, I had read an article in "R & M" that said one must be careful of the watchdogs at this quarry and so I took this statement literally and exercised due caution. As I approached the mineral location, I heard some loud barking. Suddenly two mongrels popped out of the brush and started to follow me. Upon raising my hand and scolding them, they both stopped "dead in their tracks" and neither one moved an inch nor bothered me for the rest of my trip.

David E. Sosin

January 9, 1950 Highland Park, N. J.

COLLECTORS' COLUMN

Conducted by A. CAL LECTOR

This column, which began with the Sept-Oct., 1948, issue, is of special interest to beginners in mineralogy as we comment briefly on one or more of the common minerals. In the last issue we talked on biotite. This time we will take up calcite, one of the most common of minerals.

Calcite

Calcite is a very common mineral. It seems to occur everywhere and anywhere. It is found in all colors—colorless, black, blue, brown, gray, green, pink, red, violet, white, yellow, and in form varies from beautiful crystals to crystalline, cleavable, granular, earthy, stalactitic, stalagmitic, etc.

Calcite is unique in that though it is found in many different forms and colors it is almost always called "calcite," such as colorless calcite, blue calcite, satin spar calcite, calcite stalactite, etc. Quartz, on the other hand, has a different name for practically every color and form as amethyst, citrine, agate, flint, jasper, sard, etc.

Calcite is so common that good specimens are found in most states and countries. Some of the most beautiful calcite crystals known come from the iron mines of Cumberland, England, as at Egremont, and from the Furness and Stank mines of Lancashire; the lead mines of Alston Moor, Cumberland, and Weardale, Durham, also in England, likewise produce very fine specimens. The lead-silver mines of Andreasberg, Harz Mts., Germany, and the lead-zinc mines of the Joplin, Mo., area, are two other noted localities for fine calcite crystals.

The zinc mines of Franklin, N. J., produce beautiful cleavages of calcite which vary from white to gray, brown, pink and other colors.

Many caves throughout the world contain beautiful stalactites and stalagmites, and often of gigantic size. The Mammoth Cave of Kentucky, Carlsbad Caverns of New Mexico, Howe Caverns of New York, and Luray Caverns of Virginia are just a few caves which contain beautiful stalactites and stalagmites.

Among some of the many forms of calcite which a beginner should strive to obtain for his collection are crystal, crystallized, crystalline, cleavable (cleavage), oolitic, satin spar, Iceland spar, stalactite, stalagmite, sand calcite crystals, calc tufa, etc. These may all be obtained from dealers who can supply attractive and most interesting specimens from domestic and foreign localities. Get a few specimens from your favorite dealer, examine them carefully, and then do a little rock hunting in your area—who knows but you might find better specimens at home than what come from some famous locality.

Some Phantom!

Editor R & M:

Enclosed find renewal. Our whole family enjoys R & M, even my four year old youngster. We have been taking him on field trips since he was two, mostly to a quartz crystal locality where we find some phantoms. Recently he saw a 50 lb., cake of ice, cloudy in the center. His only comment on it was, "Mama, look at the huge phantom!"

Mrs. Leon Cornes
Ripley, Calif.

January 3, 1950

Canadian Collector Wants Visitors!

Editor R & M:

Last summer I had as visitors, Mr. and Mrs. Cook, of Akron, Ohio, and took them to the Dinosaur Graveyard; they left for home with about 100 lbs., of petrified bone and petrified wood. I would be very pleased to see more collectors from across the border. How about you, yourself, making the trip?

Bob Hadden
Aldersyde, Alberta, Canada

January 15, 1950

Never Send A Final Notice!

Editor R & M:

Please excuse me for being late with my renewal and please never send me a FINAL notice. There are a long list of things I would rather be without before I would even consider giving up *Rocks and Minerals*. Just keep the magazine coming and I will get my renewal payment in like I always have before—and I will be on the lookout for new subscribers for you.

W. H. Anderson
Pleasant Grove, Utah

November 26, 1949.

CLUB AND SOCIETY NOTES

ATTENTION SECRETARIES—If you want your reports to appear in the July-August issue, they must reach us by June 20th—the Editor.

AMERICAN FEDERATION DIRECTORY

The officers of the American Federation of Mineralogical Societies have undertaken a project to compile a directory of all the membership in all the local Mineralogical Societies in the United States. While this is a tremendous undertaking, it can be greatly accelerated if the secretaries of each local will mail to me, without further solicitation, the membership lists for the years 1949 and 1950.

The reasons for compiling this directory are many and urgent. When published, it will be a most valuable guide to all the members and societies everywhere. It will knit the mineralogical fraternity into one great group. For ease in putting members in touch with one another by correspondence; as an aid in travelling, or exchanging minerals, it will be the best medium in existence, if we have widespread co-operation in compiling it. Right now, the Mid-west Federation is preparing for the big national convention in Milwaukee, June 28, 29 and 30, and would like to send out literature to locals everywhere. A directory would help them immensely—lets hurry. Will the secretaries or the presidents of each local please attend to this at once. Follow the form below, as it will systemize the data.

1. Name of local Society.
2. President ....., Address .....
3. Secretary ....., Address .....
4. Affiliated with which Federation.
5. Meeting dates, (as, First Tues. of each month.)
6. Meeting place, (as, State Museum, Phoenix, Ariz.)
7. 1949 and 1950 Membership. (Write name in full, if possible, (as, James R. Miller, Joliet, Ill.)

Send this information at once to:
Prof. Junius J. Hayes, Secretary,
American Federation of Mineralogical Societies,
University of Utah,
Salt Lake City, Utah.

Desert Gem and Mineral Society

The Desert Gem and Mineral Society of Blythe, Calif., held its annual Christmas party on Dec. 22, 1949, with a delicious baked ham dinner as the main feature. Thirty members and their families were present, each member bringing a gift-wrapped specimen for exchange. Highlights of the evening were games, guessing contest (number of crystals in a jar), a story written by one of the members, and an auction of interesting specimens.

Mrs. Leon Corones, Sec.
Box 82
Blythe, Calif.

Western Nebraska Mineral Society

The Western Nebraska Mineral Society of Chappell, Nebr., elected John F. Bergstrom, President; Paul C. Bergstrom, Vice-President; Wilbur Criswell, Secretary-Treasurer. Travelling rockhounds are cordially invited to make use of the Club's facilities and visitors are welcome at our meetings which are held on the second Monday of each month.

John F. Bergstrom, Pres.
Chappell, Nebr.

N.O.T.S. and Searles Lake Societies Make Joint Field Trip

N.O.T.S. Rockhounds and Searles Lake Gem and Mineral Society members enjoyed a profitable field trip to the amazonite and beryl deposits in the Inyo Mts., just east of Lone Pine, Calif., on Sunday, January 22nd, 1950. Nearly 50 members were present as this material is popular with both gem cutters and mineral collectors. It was an easy trip as all roads are paved except for six miles of good dirt road.

A new seam of amazonite was opened up and a number of terminated crystals, some an inch and a half or more in diameter, were taken out. There was plenty of incomplete crystal material of good color that makes fine cabochon material for the gem cutters. Beryl was harder to find and get out but Ralph Dietz of the N.O.T.S. group came home with some good small crystals in matrix.

This trip is one of the many field trips that are planned for those who attend the 1950 Convention of the California Federation of Mineralogical Societies at Trona, Calif., next June 17 and 18. Members of the Convention Field Trip Committee were along to scout the roads and stake out plenty of good material for the June visitors.

Mineralogical Society of the District of Columbia, Washington, D. C.
President's Annual Report for Year 1950
20 January 1950

Monthly Meetings Held by the Society.

a. Special

(1) 20 January, *Third* Annual Dinner, Brook Farm Restaurant, Chevy Chase, Md. The Master of Ceremonies was Mr. Jas. H. Benn. The overall project was managed by Mrs. William B. Haliday, assisted by Mr. Haliday and other committee members.

b. In Room 43, U.S. National Museum

(1) 18 February, Dr. J. D. H. Donnay, Johns Hopkins University—"Crystallography."

(2) 18 March, Dr. W. F. Foshag, USNM—"Paracutin Volcano, Mexico."

(3) 15 April, Dr. E. P. Henderson, USNM—"Meteorites."

(4) 20 May, Major E. D. Taylor, RCE—"30 days mineral collecting in Mexico" and Mr. Tony Rapp—"Collecting in Japan."

(5) 17 June, Mr. Sam Turner, Ariz. GS—"Localities in Arizona and Nevada."

(6) 21 October, Mr. William Pitts, Dean of Lapidaries—"Thin Sections." and Dr. Edgar O. Bowles Jr., Am. U.—"Climates of the Geologic Past."

(7) 25 November, Dr. John P. Marble, USNM—"The Rare Earths."

(8) 16 December, Dr. Charles Milton, USGS—"How a Mineralogist Earns a Living."

(9) Summary—The above lectures, by authorities in each respective field, were usually illustrated by slides or motion pictures. Increasing interest in this type meeting, left standing room only at times in Room 43. The average attendance was about 75.

c. Summer Lawn Meetings

(1) 15 July, Mr. G. A. Robertson, Speleologist—"Cave Formations," at the home of Mr. James H. Benn, Silver Springs, Md.

(2) 19 August, Dr. John D. Ridge, Penn State—"Minerals of Franklin Furnace," at the home of Mr. Ned Blanford, McLean, Va.

(3) 16 September, Capt. R. H. Mackelfresh, CE—"Fake Oriental Gems," at the quarters of Lt. Col. John J. Livingston, Ft. Belvoir, Virginia.

(4) Summary, This concluded the third successful season of this type of out-door meeting. The average attendance was about sixty

Field Trips

a. 8 May, Ft. Washington, Md.—Selenite crystals.

b. 22 May, Greenstone, Pa.—Cutting material, copper minerals.

c. 12 June, Goose Creek (near Leesburg), Va.—Zeolites.

d. 10 July, Mineral Hill, Md.—Mica and copper minerals.

e. 14 August, Rock Springs, Md.—Williamsite, kammererite, chromite, etc.

f. 10-11 September, Amelia Court House, Va.—Pegmatite minerals.

g. 9 October, Fishers Gap, Skyline Drive, Va.—Unakite.

h. 13 November, Mineral, Va.—Sulfides.

i. Summary—Many senior members of the Society have repeatedly visited most of the above localities. For this reason the average attendance was only about thirty.

Executive Committee Meeting

a. 23 April, at the home of Mr. James H. Benn, Silver Springs, Md.

b. 24 September, at the home of Lt. Col. R. L. Mitchell, Alexandria, Va.

Membership

a. There were a total of 32 new members admitted to the Society during the year. Total *active* membership is 160.

b. Elected to Honorary Membership:

(1) Dr. R. S. Bassler, Head Curator of Geology, USNM—retired.

(2) Mr. James H. Benn, USNM, Society President 1946 and '47.

c. Elected to Life Membership:

(1) Dr. Titus Ulke, Scientist—retired.

(2) Mr. H. B. Derr, Naturalist—retired.

d. Deceased:

Lt. Zdnek Hajny, killed in a motor vehicle accident in Japan, 3 October.

Mr. Delmar D. Brubaker, died in Washington, D. C., 10 December.

5. *Mineral Minutes*: Twelve monthly issues (Volume 7) of MINERAL MINUTES, official organ of the Society, were published and distributed to members. This publication was edited by Mr. French Morgan.

6. *Exhibit*: Much favorable comment was received on a mineral exhibit placed on display in the D. C. Public Library during Nov. and Dec. This project was handled by Mr. P. R. Cosminsky.

7. *Lapidary Club*: The "Lapidary and Gem Collectors Club of Washington, D. C." was organized late in the year with 58 charter members. Forty-five of this number, including all seven officers, are also members of the Mineralogical Society.

8. *National Convention*: Mr. Harry L. Woodruff, gemologist, represented the Society at the National Convention of American Federation of Mineralogical Societies held in Sacramento, California, 24-26 June and presented a paper on Tourmaline. He was also selected as one of the judges.

9. *Constitution*: The Society's constitution and by-laws were revised, expanded and brought up to date by a special committee and are now ready for presentation for acceptance.

10. *Mineral Collecting*: Some of the outstanding examples of mineral collecting for the year were: Major Taylor in Mexico, Tony Rapp in Japan, Ned Blanford in North Carolina and Col. Livingston in the Illinois Fluorspar District.

11. *New Discoveries*: Another name was added to the long list of Amelia Court House minerals when *Manganocalcite* was found by Col. Livingston in March. This mineral occurs as small, milky-appearing rhombohedrons included in clear, doubly-terminated quartz crystals. It was found in a cut on the Southern Railroad, one-half mile west of town.

12. *Door Prizes*: Dozens of choice mineral and lapidary specimens donated by USNM and various members were awarded as door prizes at regular meetings. Also, about 60 volumes of the Department of Interiors' *Minerals Yearbook* were presented by Mrs. William B. Haliday for distribution. One set of these books was placed in the Society's library.

13. *Conclusion*: This marks the close of the *EIGHTH* successful year of operation of the Society. In the years to come may it continue to flourish and provide fellowship, wholesome recreation, and diversion for those afflicted with that uncurable but pleasant disease known as "Mineralitis." It has been a genuine pleasure as well as a great honor to serve a second term as president of the Mineralogical Society of the District of Columbia.

John J. Livingston, Pres.

Tucson Gem and Mineral Society

Tucson Gem and Mineral Society met Tuesday, January 17, at the State Museum on University of Arizona Campus. A talk by Mr. John T. Roberts, Mining Engineer, on "An Amateur Sees Peru," with lantern slides, was enjoyed by all present. A field trip to the Helvetia Mining Camp the 22nd netted excellent specimens for all who went. Visitors are welcome at all meetings.

David Record
4400 Mission
Tucson, Ariz.

Texas Mineral Society

The Texas Mineral Society met Tuesday, December 13th, 1949, at 8 P. M., in the Baker Hotel, Dallas. Mr. A. R. Eife made a most interesting talk on "Western Mineral Localities."

The Texas Mineral Society met at the Baker Hotel at 8 P. M., on January 10th, 1950. The meeting was called to order by the president, Mr. Thomas Copeland. The minutes of the last meeting were read and approved.

Dr. Arthur Richards, professor at Southern Methodist University, made a talk on the highlights of his trip through the west last summer and illustrated it with colored slides and specimens.

There being no further business the meeting was adjourned.

Fred N. Bentley, Secy-Treas.
5319 Alton Street
Dallas, Texas

Pacific Mineral Society

John M. Akers presents talk on "Mining in Peru" to Pacific Mineral Society, at the January meeting held on the 20th at the new location, 3716 Wilshire Blvd. Los Angeles, Calif.

The Society was honored by the presence of Mr. and Mrs. Jack Streeter of Tujunga. Mr. Streeter is president of both the California Federation of Mineralogical Societies and of the American Federation. He presented the Pacific Mineral Society with the State Plaque for the second six months of the year which ends at convention time this summer. The plaque is presented each year to the winner at the Annual State Federation Convention for the prize mineral display for societies. This year the award was a tie between the Pacific Mineral Society and the Southern California Mineralogical Society of Pasadena, who held the plaque the first six months since the convention in Sacramento. Pacific Mineral Society had the plaque all last year.

Our speaker, Mr. John Akers with Mrs. Akers, spent several years in Peru. Mr. Akers is chemical engineer with the Goodyear Tire and Rubber Company. He is a graduate engineer from California Institute of Technology, and recently completed several years in charge of the Laboratory for the Campania Goodyear del Peru, in Lima, Peru. Early in 1936 he organized the Southwest Mineralogists and for several years gave weekly lectures on minerals for that society. Mr. Akers is the informal sort of speaker that makes you feel so completely at home that you feel you are making the trip with him while viewing the beautiful colored slides he uses to illustrate his lecture. The Akers covered Peru thoroughly while living in Lima.

We were impressed with the extent of the mineral deposits in the Andres, "The vanadium and bismuth operations were described as the world's largest." Enargite was the principal copper-silver ore and the outstanding silver derivitive was tennantite. Galena accounted for most of the lead and sphalerite for the zinc. Arsenic and antimony are most important in Peru.

New officers for 1950 were elected, John A. Jones will be president, with R. M. Glenn as first vice-president and Ralph H. Gooly second vice-president, Miss Ruth L. Kuehne will be secretary and W. A. Clarke, treasurer, field trips will be arranged by R. J. Wilson and Director elected was Rev. John C. Weston.

Glowing reports of the three day New Years trip to Death Valley made the stay-at-homes envious. Specimens of selenite, meyerhofferite, inyoite, bakerite, colemanite and other borax minerals were gratifying.

Thanks to Mrs. Bertha Royer for pinch-hitting for me while I was fighting the "flu-bug"; she makes a "swell" note taker.

Myrtle Musselman
26327 Athena Ave.
Harbor City, Calif.

Newark Mineralogical Society, Inc.

The 268th regular meeting of the Newark Mineralogical Society was held Sunday, December 4th, 1949, in the Newark Museum.

The program consisted of a talk by Mr. William B. Aitken of Westwood, N. J., president of the North Jersey (Paterson) Mineralogical Society, describing his search for Uranium minerals and others of the local territory in Bancroft, Ontario, Canada. He told interesting stories of the following minerals, which he had on display and which he tested with the Geiger counter: Ellsworthite from Hybla, Ontario; Cyrtolite from Birds Creek, Ontario; Uraninite from Wilberforce, Ontario; and two unidentified new find specimens which geologists of Ottawa say has Pitchblende characteristics.

Then Aitken spoke of the many tricky characteristics of radio active minerals and how the whole region responds to the Geiger counter. The members who responded to the request to bring their radio active minerals to be tested on the Geiger counter and give their history were Messrs. Louis Reamer, Vincent Giordano, Paul Kellinghausen, Dr. Paul Walther, Leonard Morgan, Albert White and Gene Vitali.

Eighty-five members and friends were present to hear Mr. Aitken, which was probably the largest mineralogical society lecture meeting ever held in New Jersey. A warm welcome was extended to our former president, Mr. Richard Milburn, who just recovered from an operation.

Herman E. Grote, Pub. Chm.

269th Regular Meeting

The 269th regular meeting of the Newark Mineralogical Society was held Sunday, January 8th, 1950, in the south gallery of the Newark Museum.

The program for the afternoon consisted of a quiz conducted by Mr. Edwin Skidmore of Mountainside, N. J., and assisted by our president, Mr. Albert White of Flanders, N. J.

Mr. Skidmore appointed Mrs. Matte and Mrs. Bemis to head the two opposing teams, who selected their teams from the members and friends in the audience. For one whole hour mineralogical questions were thrown at one team or the other, and if it failed to answer, the other side had an opportunity to answer and get credit. Good sportsmanship and competition reigned throughout, and everyone had a better insight of just how much mineralogy they, or fellow members, really possessed.

One of the outstanding features of the quiz was the knowledge displayed by two young boys, who were visitors for the first time, Bevin French and William Norlander both from Nutley, N. J.

The team headed by Mrs. Bemis won the contest and each of the victors received a mineral speciman, a gift of Mr. Skidmore and Mr. White.

Before the meeting was adjourned, a vote of thanks was extended to Mr. Skidmore and Mr. White. It was also resolved to hold at least one quiz a year in the future.

The writer recommends this type of program to other societies who will find it one in which all members can take part and also refresh their memories.

Herman E. Grote, Pub. Chm.

Newark Steps Out

On October 23rd, 1949, the Newark Museum opened an exhibition entitled "The World of Science and the Layman" in which the Newark Mineralogical Society and the Newark Lapidary Society took an active part. On this opening day, two excellent demonstrations of cutting and polishing on the lapidary wheel were given by Mr. Louis, president of the Lapidary Society, after which refreshments were served by the Museum staff, to all those attending.

On Nov. 20th Mr. Paul Kellinghausen representing the Newark Mineralogical Society gave a very fine discourse and exhibition of fluorescent minerals with ultraviolet lights to which the members and public were invited and very well attended.

Some members of the mineral society offered their choice and almost priceless specimens for display and in addition there was a booth of fluorescent minerals under ultra violet light.

Beautiful cabochons, faceted stones, polished spheres, geodes, scenic cuttings and handsome hand wrought silverware, gold and silver rings, bracelets and other jewelry, some set with stones, were shown. All these were the work of the members of the Lapidary Society.

The exhibition received publicity from the local newspaper and was viewed by a steady flow of people from Newark and the suburbs, so much so, it was extended for an additional month or more.

All participants join in congratulating Mr. Irving Black and Mr. Kenneth Gosner of the Museum staff, for their splendid arrangements of the exhibit and Miss Katherine Coffey, Director, for her co-operation.

The following is a list of the names of the members of the Newark Mineralogical Society who exhibited:

Mr. Edwin Skidmore, John Albanese, Paul Kellinghausen, Louis Reamer, Leonard Morgan, Mr. and Mrs. R. Newick, Mrs. A. L. Matte, Mr. Vincent Giordano, Wesley Hayes, Paul Walther, Albert White, Wilford Welsh, Herman Grote.

For the Lapidary Society: Mr. Louis Andl, William Aitken, Garvin Taylor, Morris Weeks, Peter Farley, Edwin Judd, Mrs. R. Newick, Mrs. L. W. Whitton, Mrs. La Blanche Weeks, Isabel Bemis, Mr. Cornelius Verburg, Louis Eaton Shaw, Leonard Morgan, Robert Webb, Samuel Gibey, W. E. Reichle, F. J. Ward, Edwin Bemis, Herman E. Grote.

Herman E. Grote, Pub. Chm.
95 Lenox Avenue
Newark 6, N. J.

Cincinnati Mineral Society

A gala supper meeting brought to a successful close another outstanding year of progress of the Cincinnati Mineral Society.

On December 15, 1949, at the popular Grammer's Restaurant, 16 members gathered to celebrate in fashion of the season, and to discuss achievements of the past year.

Due recognition was given to the retiring officers and their committees for their unselfish devotion to make the activities of 1949 a leading year in our Society.

The retiring officers, Charles Gschwind, President; Ralph Dury, Vice-President; Ralph Clark, Treasurer; Elizabeth Brockschlager, Secretary; and Edgar Sarles, Corresponding Secretary, all contributed comments on their activities for the year.

The following newly elected officers were installed for the year 1950. President, James R. Clements; Vice-President, Thomas H. Wiebell; Treasurer, Ralph Clark Jr., Secretary; Charles L. Gschwind; Corresponding Secretary, Frank P. Atkins Jr.

Mr. James R. Clements our new president announced the appointment of the following committees:

Program Committee: Chairman — Grover Hubing, Charles L. Gschwind, Ralph Clark, Warren Wells.

Membership Committee: Chairman — James Gibbs, Mabel Spellmire, Elizabeth Brockschlager, Mrs. Ralph Clark, Mrs. Ralph Currie.

Field Trip Committee: Edgar Sarles, Chairman, Charles Gschwind, Thomas Wiebell, Buford Payne.

Publicity Committee: Chairman—Frank Atkins, Jr., Mrs. James Fox, Ralph Dury.

So with this imposing array of competent officers and committeemen to guide our energies for 1950; A very promising year lies ahead of our Society.

The Cincinnati Mineral Society takes this opportunity to extend wishes for a successful New Year to all the fine mineral societies throughout the world who are responsible for continued active interest in minerals.

Charles L. Gschwind, Sec.
6931 Diana Drive
Cincinnati 24, Ohio.

Cincinnati Mineral Society

A regular meeting of the Cincinnati Mineral Society was held Wednesday, January 25, 1950, 8:00 p.m., at the Cincinnati Museum of Natural History, Cincinnati, Ohio.

Mr. James Clements, president, opened the meeting with a brief statement on plans for the year. Chief among these plans is to place emphasis upon the frequent handling of a few minerals rather than learning a little about many minerals.

Mr. Gschwind, secretary, read a letter from Mrs. Kathryn Montague, membership chairman of the Midwest Federation of Mineral Societies, relating to membership in this group. Additional information was to be obtained before becoming affiliated with the Federation.

Mr. Grover Hubing, program chairman, announced that the meeting was to be devoted to the testing and identification of eight minerals. This is to be done on the basis of knowledge presented in previous lectures on physical properties and terms presented by Mr. Gschwind. Data work sheets were given to members to work to and to be kept as a record of knowledge gained about minerals, and that already known. Complete field testing equipment was available for use, and the activities of the members was directed by Messrs. Hubing, Clark, and Gschwind.

The minerals covered were as follows: talc, fluorite, mica (muscovite), hematite (earthy), magnetite, niccolite, galena, and smithsonite. Members were to work on at least three of these; specimens of all were presented to members who cared to keep them.

Information requested on work sheets were as follows: crystal forms, cleavage, hardness, specific gravity, fracture, luster, color, streak, flame color, magnetic, acid test, roasting, open tube, treatment on charcoal, fusibility, reaction on test paper, mineral name, composition, and specific use.

The 15 members and 2 guests present participated in this fascinating study of minerals and from comments received it was a real success and was just what the members have been wanting.

Our guests were Mr. E. T. McCarthy and Mr. Waldo Yonkers, both of whom have been with us in the past. Mr. McCarthy was accepted as a member of the Society at this meeting.

Our next meeting will concentrate on two minerals to be chosen by two of our members, James Gibbs and Frank Atkins Jr. These men will each lecture on the mineral of his choice and perform significant tests. From this the balance of the members are to record their observations on the data work sheets; this to be followed by a question period presided over by the program chairman, Mr. Hubing.

Charles L. Gschwind
6931 Diana Drive
Cincinnati 24, Ohio

Humboldt Gem and Mineral Society

Seventy-odd persons gathered together on Jan. 20, 1950, and formed "The Humboldt Gem and Mineral Society" and elected the following officers. President, A. W. Porter; Vice-President, Robert M. White; and George A. Morgan, Secretary-Treasurer. Committee members were chosen on Constitution and By-Laws, Board of Directors, Field trips, etc. and talks were given on the various phases of collections and lapidary work. The organization will meet weekly and the organization intends to keep the trails hot this coming year.

George A. Morgan
925 17th Street.
Eureka, Calif.

Mineralogical Society of Arizona

The story of emerald mining in the Andes reads somewhat like the wild west stories of early Arizona. Rich deposits have to be camouflaged to hide them from roving bandits. One deposit (and this is no Pegleg Smith tall tale) produced an emerald as large as a small baseball bat and weighed 3,500 carats. These and other curious facts were told by Mrs. John Lentz of Phoenix who gave an illustrated travelog on South America at the Nov. 18 meeting of the Mineralogical Society of Arizona. The kodachromes were taken by her son, Malcolm, who with Lloyd Fradrique of Houston, Tex., is touring South America in a jeep.

Photographs were shown of the famous bandit, Vincenti and of Tio Justo, the oldest emerald miner. Both are said to be wealthy but are still working in the mines.

Mrs. Lentz said that telegrams are often relayed in the mountains by Indian runners; and transportation made by airplane due to rugged Z-roads which wind through mining districts to 12,000 feet altitude. Water is brought 70 miles by aqueduct to the mines.

Kodachromes taken on the way to Colombia showed famous Moro Castle in Cuba with Flamboyant trees in bloom; buoys marking the spot where the Maine went down, and the area of Sir Francis Drake's lost treasure; cigar makers who are read to as they work; and an impressive photograph of the Christ of the Andes.

From Venezuela to the Colombian jungles the travelers crossed a desert with Palo Verde-like trees and a species of Organ Pipe cactus. Pictures of Bogota (pop. 1M.) showed scenes of the recent revolution, and 80,000 people at a bull fight.

The MSOA celebrated its 14th anniversary on December 2, with a rock auction and social, and a full house. Charter members present were Arthur L. Flagg, president; H. B. Holloway, secy-treas., and Luther Steward, all of Phoenix, and Ben Humphries, field trip committee of Cashion.

Arizona Pegmatites—Geophysical Prospecting

Ben Humphreys, Cashion, Arizona, described pegmatite dikes as magma flows arrested and cooled before reaching earth's surface. At the December 16 meeting of the Mineralogical Society of Arizona he gave highlights of his field work in Arizona for Whitehall Company of New Hampshire, locating feldspar deposits.

Granite pegmatites, he said, lie in the western half of the state. They contain commercial minerals: feldspar, bismuthite, tungsten, beryl, etc., and many are radio-active. Large pegmatites cool more slowly, giving the minerals a chance to segregate. Minerals of each kind seem to have a chemical attraction for grouping together. Mica crystals form layers near the edge, feldspar next, with quartz cores in center.

Feldspar is the most important mineral for general use, one is the manufacture of Bon Ami. Beryl, which occurs only in granite pegmatite, is also in demand. Its common use is in tempering copper. Humphreys says that beryllium reacts to tests in the same way as does magnesium; that at present there is no simple field test for it.

Samuel J. Joseph, Phoenix geologist, and representative of the Geophysical Instrument Co., Arlington, Va., was guest speaker January 6. Joseph described methods of geophysical prospecting with five major instruments; the magnetometer, gravimeter, Gish-Rooney, seismograph and Geiger counter.

He explained that mineral deposits or their associated structures produce magnetic and gravitational attractions—or offer varying resistance to sound waves or electrical currents. That certain surface formations are related to those deposits. The object of geophysical prospecting is the interpretation of formations, structures and depths, and the measuring of the various forces by sensitive instruments to determine location of minerals.

The Geiger counter, used to locate radioactive minerals, receives its background count from cosmic rays. The seismograph is used by all major oil companies in locating oil. Other instruments determine ore deposits in addition to oil. Minerals that have no magnetic pull are located through structures habitually associated with them.

He said a type of magnetometer was used in Sweden to locate magnetic deposits as early as the 17th century. The seismograph was developed in the 19th century, first for earthquake registration.

MSOA has sponsored two field trips this season. One to Mummy Mountain to explore pegmatite; one to Saddle Mountain for carnelian, desert roses and opalite.

Ida Smith. Pub. Chm.
2010 West Jefferson
Phoenix, Arizona

New Jersey Gem and Mineral Society
(Passaic, New Jersey)

The Passaic County Gemological and Mineral Society changed its name to the New Jersey Gem and Mineral Society, at its meeting February 7, 1950.

The officers of the Society have been re-elected Mr. Howard J. Hewitt, President; Mr. John J. Stewart, Vice-President, Mr. Joseph C. Hanzl, Secretary and Treasurer.

Plans for Field Trips for the season are being planned. Trips will be to Connecticut, New York and New Jersey.

Fluorescent Minerals and lights were discussed and displayed at the meeting. Many of the minerals shown were from New Jersey.

Membership is now open. Meetings are held the first Tuesday of each month except July and August. Meetings are held at 565 Main Ave., Passaic, N. J.

For information write to Joseph C. Hanzl, 18 East Second Street, Clifton, N. J.

Joseph C. Hanzl, Sec.

Chicago Rocks and Minerals Society

Under the direction of Clell Brentlinger the Annual Auction of the Chicago Rocks and Minerals Society was bigger and better than ever. With the able assistance of Curator George C. Anderson and Lester Kaylor, Clell demonstrated that auctions can be more than just mere money raising ventures. Donations were both plentiful and attractive, attendance was beyond expectations, bidding was spirited and visiting friends, particularly from the Marquette Geological Association, were many and a good time was had by all. It is particularly of note that a warm glowing friendship exists between the two dominant societies in Chicago.

After the Auction, Steven T. Norvell entertained the many guests with an illustrated talk on the landscape geology, volcanisms and glaciations of the Mountains of the Moon area in Idaho, the history and geysers of Yellowstone, and the glacial depositions in the Great Lakes region. Besides knowing his subject well, Mr. Norvell is a discerning color photographer.

President Herbert Grand-Girard projected one slide from his collection of colored photomicrographic slides to demonstrate the possibilities of crystallographic photomicrography. Mr. Grand-Girard's colored photomicrographic slides of crystals were made with the aid of thin slides of various rock materials, a high powered microscope, a 35 mm camera and polarized light.

Field trips have been discontinued for the winter months, but there is much enthusiasm and talk about proposed new trails in the spring. "Heighho, heighho, a wanderin again we'll go."

The last field trip, though watery and wet, under the direction of Mr. L. Gleiser, of Lake Forest, Illinois, was a decided success, for everyone procured material in abundance. The search was for marcasite, fossils, crystals and pebbles that proved to be offshore in a gravel bed knee deep in water that was anything but warm. Mr. Gleiser ably demonstrated the necessary technique by first wading into the cold lake and then how to scan the underwater area for deposits of varying crystal formations. To other rock hounds, we invite you to try it sometime.

January Meeting

John F. Mehilcic, Secretary of the Mid-West Federation of Geological Societies, honored the Chicago Rocks and Minerals Society at the January meeting with a lecture on "Collecting and Collections." Mr. Mehilcic, a resident of Detroit, Michigan, illustrated part of his lecture with color Kodachrome slides of mineral specimens and collections. He imparted much information on the geology of the Michigan-Wisconsin region and also gave the location of excellent hunting grounds in the same territory.

The characteristics of many of the outstanding members of the Detroit Society was fondly and humorously discussed by the speaker, which brought a feeling of intimacy amongst our Society members and visiting out of town guests too numerous to mention by name. Milwaukee and Joliet Mineralogical and Geological Societies, as well as, our close neighbor, the Marquetteites, were well represented.

Open house meetings amongst the societies in the Mid-west are becoming more and more frequent.

At a previous meeting to this, which was held in December, Mr. Thomas J. Scanlon, Marquette's well know authority on handling Jade, highlighted that evening with a lecture on the geology of the Idaho-Wyoming country, dealing in particular with the Teton Range. His audience also received a treat in being privileged to view his excellently photographed and rare color kodachrome slides.

Mr. Ted Hedlin, a rockhound from far off Portland, Oregon, surprised us with his presence at the meeting.

Any out of town members of other societies are always welcome to attend our meetings which are held the second Saturday evening of each month, at 8:00 P. M., Greenbriar Field House, 2650 W. Peterson Avenue, Chicago, Illinois.

Helen L. Cooke
Publicity Chairman
2952 N. Lavergne Ave.
Chicago 41, Ill.

Georgia Mineral Society

Educational films on geology were featured at the January meeting of the Georgia Mineral Society. A report was made on the activities of the Prospectors and Explorers Section, a recent addition to the Georgia Society, by the chairman, Earl Wingo. This group participates in active field work involving all types of prospecting leading to the discovery of new mineral deposits of a commercial character.

The polariscope and its use in gem testing was studied at the January Gem Section meeting. Sam Knox acted as moderator and demonstrated the use of the instrument. He showed new members how to assemble a small polariscope.

Dr. H. W. Straley, professor of geology at Georgia Tech., discussed "Incaland" at the February meeting of the Georgia Society. Dr. Straley has recently returned from a study of strategic mineral and oil resources in the Andes Mountain section of South America. He showed lantern slides of the geology, mineralogy, and ruins of the Incas.

Ernest Risse' demonstrated the use of the refractometer at the February Gem Section meeting. A grab-bag sale of faceted gems added to the interest of the group assembled.

Erna L. Mason, Cor. Secy.
State Department of Health
Atlanta, Georgia

The Mineral & Gem Society of Castro Valley

The Mineral and Gem Society of Castro Valley held their regular monthly membership meeting Friday evening, January 13, 1950, in their new meeting place, the Faculty Dining Room of the Hayward Union High School, which was well attended.

A demonstration of rock grinding was preceded by a short-business meeting when plans were made for the formation of a class in silversmithing through the facilities of the Hayward Union High School. Signups were requested of all persons interested, membership, in the Society not being necessary for this purpose. Approximately ten names were secured and additional information may be obtained from the Society's Secretary at Lucerne 1-7100.

Mrs. B. E. Sledge, Librarian, reported that there are now seven good books on mineralogy in the Society's library which are available for loan to members. Announcement was made of plans for a field trip on Saturday, January 28 to Valley Springs in search of moss agate which will leave at 7:00 A. M. from across the street from the Hayward City Hall.

The rock-grinding demonstration was conducted by Tom Robb and L. O. Taylor on actual bench equipment which was moved in for the occasion. They showed the technique for marking and cutting the material, rough polishing on a carborundum stone, smooth polishing on a sandpaper wheel and the final finishing with polishing rouge. Supplementary remarks were made by F. W. Buhn, Don Wills, Glen Beach and Col. Branson, the Society's President.

Mrs. E. Iverson and Mrs. F. E. McFarland won the two door prizes and two new membership applications from Bernard Conley and Wesley Gordon Jr., were received.

A. B. Emmes, Pub. Chr.
P. O. Box 145, Castro Valley, Calif.

Mineral & Gem Society of Castro Valley

The Mineral and Gem Society of Castro Valley held their regular monthly membership meeting in the Faculty Dining Room of the Hayward Union High School on Friday, February 10, 1950.

The Society's field trip on Sunday, February 12, to Pescadero Beach was announced by Tom Robb and L. O. Taylor and President C. B. Branson stressed the need for additional enrollments in the new Silversmithing and Jewelry-making Class which is scheduled to start on Monday, February 20, at the Hayward Union High School, hours 7 to 10 p.m.

All members were also urged to participate in the Society's Mineral Show which is to be held in the Auditorium of the Castro Valley Grammar School on Saturday and Sunday, March 18 and 19, under the Chairmanship of Buster E. Sledge assisted by Directors Vlaardinger, Robb and Taylor.

Following the business meeting, Professor George Needham, M. Sc. of San Francisco, assisted by Ted Schroth, presented an illustrated lecture on the preparation and display of Micro-Mineral Mounts. He stressed the relative compactness of such collections in which the specimens are mounted in inch-square cardboard or plastic boxes and viewed under a wide-field binocular microscope with spectacular stereoscopic effects.

The mineral specimen door prizes were won by Mrs. Fred Jensen, Mrs. F. W. Buhn and Waldo Lutzschon. The following new membership applications were received: Billy Carter, Bill Gordon, Philip Gordon and R. L. Gilfillan.

Arthur B. Emmes, Pub. Chm.
7845 Castro Valley Blvd.
Castro Valley, Calif.

East Bay Mineral Society, Inc.

The members of the East Bay Mineral Society gathered in the East Oakland hills early on a Sunday morning in December for the purpose of exploring the tunnels of the old abandoned "Alma Pyrite Mine." As the mine is situated high in the hills it was a good climb to the entrance and also a pretty stroll over the old stage coach trail.

Parties of ten eager members were taken entour by Scott Williams, who is well versed on the mine's history and mineral content. Following with flash light and candle the members beheld a picture of eerie splendor unfolding before their eyes. The walls and roof of the mine were covered with varied colored sulfates. After all had been thru the mine and viewed the beautiful formations, those who wished specimens were allowed to proceed into it again.

Obtained were beautiful Boothite, Pisanite and Chalcanthite. The old abandoned dumps were rich prospecting grounds for iron pyrites, and many crystals, large and small, were picked up. The busy and enthusiastic Rockhounds voted on the spot that this last field trip of the year was also one of the year's best.

Gordon White
Corresponding Secretary
P. O. Box 1196 Oakland, Calif.

Southwest Mineralogists

The Southwest Mineralogists Inc., are busy preparing for their thirteenth annual show. The dates have been set for April 15th and 16th this year. Show to be held at the Masonic Temple at 41st Place and Figueroa St., Los Angeles, Calif.

This promises to be the biggest show yet. A wider range of awards will be given to induce the newer members to display.

The February meeting was of exceptional interest to the facetters. Our members, Mr. A. C. Gustafson, and Mr. Rodgers of R. & B. Artcraft, gave a demonstration on faceting technique, after the two stones were finished they were awarded to lucky ticket holders.

We thank these two gentlemen for an interesting and instructive evening.

Connie Trombatore Cor. Secy.
338 Pomelo Ave. Monterey Park, Calif.

Queens Mineral Society

We were most fortunate to have Dr. I. Fankuchen of the Brooklyn Polytechnic Institute give a talk on X-ray Diffraction.

Dr. Fankuchen's introductory remarks dealt with the early history of x-rays and that once the theory of regular periodic arrangement of atoms was accepted and the character of the x-ray wave known, interference phenomena could be expected. Iron pyrites were used in the first experiments.

The four general patterns made by the scattered rays, resulting from crystalline, non-crystalline, fibrous and powdered materials, were illustrated. The use of Bragg's Law in geometrical analysis of these patterns and of Monochromatic X-rays in measurement of the distance between atoms was also explained. The importance of the location of reflections and their intensity in determining the size of the unit cell and location of atoms in the unit cell were outlined respectively.

The uses of x-ray diffraction as in the determination of molecular weights and chemical formula were illustrated. The atomic structure of silicates was shown in several slides to reveal the tetrahedral arrangement of silicon and O_n, thereby disproving the theory that numerous different kinds of silicic acids existed and formed silicate minerals which were salts of the respective acids. Further uses of x-ray diffraction were also explained. Among these were the analysis of pathological tissue of the human heart and various improvements in the field of textiles, obtained as a result of numerous experiments.

The talk was followed by a question-and-answer session and the members accorded Dr. Fankuchen a rising vote of thanks.

The following officers were elected:

President, Curt G. Segeler; Vice-President, Edward J. Marcin; Treasurer, Henry J. Vogt; Secretary, Georgina F. Lemon.

Georgina F. Lemon
49 West 11th Street
N. Y. C., N. Y.

Santa Cruz Mineral and Gem Society

Santa Cruz Mineral and Gem Society was entertained at the January meeting by Dr. Darrel Sedgwick of Capitola—lapidary and local member. His illustrated talk on "Gems and Jade in India" with pictorial slides taken while he was stationed in Northern India during the last war, was greatly enjoyed by members and guests. His experiences in this land where gems and jade are considered an important part of each person's dress were largely responsible for his present interest and activity in lapidary work. He said "Mogoang is the center for jadeite, its making and redistribution. Every little village in this locality has groups of small shops that have more faceted gems and jade than one can imagine. Every individual has a few faceted gems or jade and of course the native craftsmen—with no electricity or modern equipment — spends months cutting and shaping their pieces into the round or oval stones that we see as imported jade." Since his return from the Burma area, Dr. Sedgwick has become an ardent lapidary and now enjoys the reality of owning his own modern equipment and turns out beautiful faceted stones and cabachons.

Four new members were welcomed into the Society. Among out-of-town guests were President and Mrs. R. F. Brown of The Mother Lode Society of Modesta.

Edythe M. Thompson, Pub. Chm.
Box 124 Soquel, Calif.

The Cleveland Lapidary Society

The following is a report on our recent exhibit and display at the Cleveland Public Library. December 17, 1949 to January 14, 1950.

This year we had thirty-three exhibitors as compared to sixteen last year, and the display space was nearly doubled that of last year. Many fine gems and jewelry pieces were displayed as well as a great quantity of source material.

The display was well publicized ahead of the showing and a large number of people visited the display room. On Friday evening preceding the day of closing, the crowd was so large that visitors were required to get in line to view the cases.

The library was highly pleased with the display and requested permission to have it again next year.

John M. Heffelfinger, Sec.
7619 Redell Ave. Cleveland 3, Ohio.

Pomona Valley Mineral Club, Inc.

The January meeting of the Pomona Valley Mineral Club featured a talk by W. Ellis Johnson who spoke on some of his experiences in collecting and polishing rocks. Mr. Johnson is an expert in the cutting and polishing of large flat slabs and spheres. The quality of his work was easily seen in the beautiful display he provided which included many large slabs of such materials as agate, petrified wood, and geode halves, and fourteen spheres. In addition to describing the techniques involved in cutting and polishing, he also told of collecting petrified wood, dinosaur bone, and other cutting material in sections of eastern and southern Utah, as well as in a few other western localities.

Open house this month was to be held on January 21 and 22 at the home of Mr. S. M. Buckwalter in Upland.

Nancy L. Taylor, Pub. Chm.
845 Indian Hill Blvd.
Claremonth, Calif.

Compton Gem and Mineral Club

Compton Gem and Mineral Cluub, recently organized, holds its regular meeting the second Tuesday of each month. Those interested in communicating, write Daisy Austin, 1812 Esmeralian, Compton, California.

Daisy Austin, Pub.

Gila Valley Gem and Mineral Society Charter Meeting—January 12, 1950

Membership cards were issued to 38 Rockhounds Thursday evening, January 12, 1950, when the Gila Valley Gem and Mineral Society met for its final charter meeting at Thatcher City Hall.

Mrs. Pearl Rogers gave a very interesting discussion and showed her personal collection of crystals. She also demonstrated different types of fluorescent materials with her light. Many of the group had never seen the effects of a fluorescent light and how it will bring out the coloring in different minerals. Several of the group stayed late to see and hear more about the collection.

W. W. Irvin also entertained the Rockhounds with a fascinating story in connection with a crystal cross found in a mine he had worked.

During the course of a short business meeting, Mrs. Muriel Layton was elected librarian; Rex Layton, field trip chairman; Russell Lundell, program chairman; and Lyle Grant, display chairman. Fenton Taylor took pictures of the group and refreshments were served to all present.

Those registering as charter members were Pearl C. Rogers, I. C. Ewan, Pearl I. Wheeler, Paul E. Winkler, Joe C. Gable, Ina I. Gable, Letha Thompson, Lois Irvin, W. W. Irvin, J. E. Pulsipher, Ivan Wimmer, Corinne Wimmer, H. Lyle Grant, Joe R. Rogers, Muriel Layton, Max Layton, Russell Lundell, Leola Lundell, Mrs. L. C. Lawrence, Bertha Foote, A. T. Lee, A. M. Glenn, Marie Glenn, Leonard Thompson, Eula Lee, Joe Budny, Danny Allen, Richard Boyd, Horrace Baker, Fenton Taylor, Bessie Taylor, Brooks Bryce, Erdine Layton, Rex Layton, Virginia Thompson, Joyce Thompson, and Mrs. Paul E. Winkler.

Others signing the guest register were Mr. and Mrs. R. A. Dimick, Leon Baker, Gerald Foote, Vivian Olsen, and Mrs. I. C. Ewen.

Joe G. Gable, President
Box 393
Thatcher, Ariz.

COLLECTOR'S KINKS

So your choice specimens are getting dusty and do not clean so easily by just blowing the dust off? Why not obtain a soft baby's hairbrush or a lady's facial brush (not Nylon for it may scratch soft minerals) and brush off all dust. Now cut a piece of cellophane large enough to wrap your specimen in and fold under on the bottom using tape or staples to hold it. It is a good idea to enclose identification card with the specimen. Minerals such as chrysocolla, fluorite, etc., do not discolor when wrapped this way. M. V. N.

The Los Angeles Lapidary Society

The program was furnished by the lady members, no man took part or even dared to be heard.

Under the chairmanship of Martha Meachen, the evening was very educational, entertaining and practical.

Grace Peters told how to cut Oregon Moss Agate in a way to have each framed by the matrix in which it was enclosed.

Alpha Evans showed how she designed and made her own engraving tools in a way even an amateur could follow.

Being an expert at cutting and using Horse Canyon agate in attractive designs, Martha Meachen's talk held the attention of every listener.

When silver designing is mentioned, the name Jessie Chittenden is always mentioned first, every one was glad to watch and listen for a short 15 minutes of illustration and lecture on how to "Create your own Design."

This most interesting evening was topped off by a showing of colored slides by Claire Schroeder, all pictures had been taken of field trips, bringing back memories of many happy hours in camp and of hard work digging for those precious gems and dog rock.

A well rounded program of this kind cannot be beaten for all around interest and amusement.

Yes, the ladies are good gem cutters, too.

Ted Schroeder, Cor. Sec.
P. O. Box 2184, Terminal Annex
Los Angeles 54, Calif.

ROBERT C. VANCE

(Obituary Notice)

Robert C. Vance, a long time employee of Ward's Natural Science Establishment, Rochester, N. Y., and for many years an active participant in the scientific life of this community, passed away in his sleep early in the morning of January 19th, 1950, at his residdence, 35 Woodland Road, Pittsford, N. Y. He is survived by his wife, Mrs. Helen Vance, his mother, Mrs. Loretta Vance, both of Pittsford, a brother in Tampa, Florida, and a sister in Toronto.

Mr. Vance had been employed at Ward's Natural Science Establishment for 33 years, and was head of the mineral department from 1934 until the time of his retirement in November 1947.

He was a Fellow and Life Member of the Rochester Academy of Science and had served as a Chairman of the Mineralogical Section of the Academy from 1936 to 1946. He was a Fellow of the Society for Research on Meteorites, and a member of the Mineralogical Society of America, the Mineralogical Society of Great Britain and Ireland, the Walker Mineral Club of Toronto, and the Rocks and Minerals Association. He was also a member of the Northfield Masonic Lodge of Pittsford.

JADE AND CHRYSOPRASE IN TULARE COUNTY, CALIF.

Nephrite jade of medium to dark-green color, excellent translucency, *and fine cutting quality,* is being mined on leased private land near Porterville, Tulare County. Two separate lenses have been found and more than a ton of material has been mined from one lens. Several more tons are in sight. Compressed-air drilling equipment is used but drilling the exceedingly tough and hard jade has been difficult and slow.

The *jade lenses occur on Lewis Hill about two miles north of Porterville.* The one now opened up on the southeast flank of the hill appears to be a metamorphosed inclusion in a serpentine sill. Adjoining the sill are vertical beds of metamorphosed sediments and volcanics probably a part of the Kaweah series (Triassic (?)). Of the many rock types seen on the hill most are microcrystalline and difficult to identify. Quartzite (perhaps meta-chert), argillite, and calc-silicate rocks are present in some outcrops.

Only two other nephrite jade localities of possible commercial value are known in the United States, one on the southern coast of Monterey County, California, and one near Lander, Wyoming. A report on the geology and mineralogy of the remarkably well exposed Monterey occurrence is in preparation by a member of the staff of the Division of Mines.

The operators of the jade mine, Frank Janolco and F. V. Alston of Porterville also operate a chrysoprase (a green variety of chalcedony) mine at the old Deer Creek locality south of Porterville. The operators state that this property produced $3,000,000 worth of chrysoprase in the early part of the century when the gem was most popular.

The shallow-workings are in two adjacent fissures in altered volcanic rock. Gem quality chrysoprase makes up part of the hydrothermal filling of the fissures, and very fine material is now being recovered by deeper mining of the shallow-workings driven in the early 1900's. The chrysoprase is marketed to jewelry firms and mineral dealers.

Mineral Information Service
Division of Mines,
San Francisco, Calif.
Jan. 1, 1950. p. 2

Nose on the Grindstone!

Editor R & M:

The January-February issue of R & M arrived yesterday and I have thoroughly enjoyed reading every word in it. Glad you enjoyed the Franklin, N. J. field trip even though the rain tried to spoil it. Wish I could have been with you as it has been many months since I had an opportunity to collect. Next time you take a field trip just remember this dope back in Michigan who wishes he was with you again and has his nose on the grindstone but can't get a good polish on it.

Don Gabriel
February 2, 1950 Detroit, Mich.

A Must for Every Rockhound!

Editor R & M:

I had decided to forego resubscribing to your paper to cut down on my budget spending. But I could not stand to part with R & M so here is my renewal. I will just have to cut on the groceries or something to fulfill my thrift ambitions.

R & M is simply a must to every rockhound in my opinion.

Mrs. Bryce Allen
January 24, 1950 Tribune, Kansas

An Epsomite Occurrence

(*Continued from Page* 133)

Upon leaving the mine the same system of packing was used as in the previous year, and the specimens reached their destination in perfect shape as before.

The author believes this is truly an interesting and rather unusual occurrence of the mineral in such quantity or quality, While epsomite is not a particularly rare or valuable mineral, its beauty is almost unsurpassed in specimens from this locality, and it deserves a prominent place in any collector's cabinet.

---

5 Year Renewal!

Editor R & M:

My subscription ran out the past December. I do not want to miss any issue, so please re-instate. Enclosed is my check to carry me for the next 5 years.

W. Leigh Smith
Marcus Hook, Penn.
February 3, 1950

Announcing . . .

A New Gem Material

REGALITE

The King of Gem Stones

The following paragraphs contain great news indeed for the amateur gem cutter. Here is a new material with a hardness of more than 7. It occurs in every color the same as jade. The material is jade-like in many characteristics. For some time several authorities have thought it was jade. One very prominent West Coast authority gave a definite written opinion, afer his assay, that it was true jadeite. This analysis is on file and will be shown to anyone. However, the specific gravity and refractive index is the same as quartz although the mineral content compares to Dana's listing for jadeite.

REGALITE is excellent material for spheres, book ends, ash trays, beads, buttons and any gem novelty.

REGALITE takes a very high mirror-like polish with cerium or tin oxide, on either leather or felt buffs.

REGALITE is a hard material. Why spend your talent or skill on soft materials to say nothing of your time and money?

REGALITE is as enduring as Time itself. It is as beautiful as chrysocolla, and comes in an odd shade of blue-green like amazonite. White **REGALITE** defies anyone to distingish it by naked eye alone from the finest white jadeite. This is also true of the white material with apple-green veinings.

Rough material in beautiful shades of green, green and white and pure white. Sent postpaid for $2.25 a pound. Other shades will be offered later.

Expertly slabbed material for cabochons 50c square inch, postpaid.

Price Includes All Taxes

An adequate supply now on hand for dealers. Dealers' inquiries are invited.

Satisfaction guaranteed on all purchases of **REGALITE.**

Money will be refunded promptly to purchasers who are not completely satisfied with their purchase.

ROYAL GEM COMPANY

1517 CROSS ROADS OF THE WORLD **HOLLYWOOD 28, CALIF.**